THE *PURCHASERS* PATTERN.

In two Parts.

The first shewing the true value of the Purchase of any parcel of Land or Houses, by Lease or otherwise. *Also new Tables of Interest and Rebate at* 6 per Cent.

The second Part,

Shewing the Measuring of Land, Board and Timber, and the false rules and deceits of many therein.

Also the Gauging of all Vessels, with many other Rules about Weights and Measures, and several Tables of Accounts, with many other Rules and Tables of daily use for most men.

The third Edition, much enlarged

By *Henry Philippes.*

LONDON,

Printed by *R.* and *W. Leybourn*, for *Thomas Pierrepont*, at the Sun in *Pauls* Churchyard, 1656.

To the READER.

OF all Bargains and Contracts among men there are ſcarce any which deſerve more ſerious conſideration then the conveyances of Land and Houſes.

For Bargains of this nature are uſually of a long continuance, and many times of great conſequence. Yet there is no affair where in the moſt part of men are more ſubject to erre, and not only to deceive others, but many times their owne ſelves; eſpecially in thoſe two things, either in the Aſſurance, or in the Valuation of theſe purchaſes.

As for the point of Assurance, I have little to say to that; it is the Valuation which I intend. And herein I finde those who are most conversant herein, either through want of skill and art to reckon, or care to consider thereof, they set too low a value upon a short Lease, and too high a value upon a long Lease. This is so plainly manifested from the principles of Art and Reason, that (I hope) as none hath hitherto, so none can or will gainsay it. And therefore as I am much engaged to you for your courteous acceptation of the former Editions; so I hope this shall finde the like. For herein you have the same in substance, only with the addition of some Rules and Tables to make some things more plain to the vulgar, and more exact,

act, to those who are more skilful in the Art of Arithmetick.

I have also added in the second Part, many profitable Experiments, Rules and Tables, which will be of general and daily use for most men. So that although those who have the former Editions may think they have no need of this, yet in the perusal of this they shall finde some things worthy of their cost and pains, and tending to their farther profit and experience. In confidence therefore of your wonted favour I rest

Yours,

Henry Phillippes.

A Table of the Contents of this BOOK.

THe general purpoſe, pag. 1
Rules of Law to be obſerved, 2
The Rates of Intereſt are the rule to eſtimate the price of any purchaſe, 3
Free Land worth, 20 yeers purchaſe, and reaſons why it is worth ſo much, 4,5
Value of the Leaſes of Land, 6,7
Value of Houſes diſcuſſed, 7,8,9,10,11,12
Whether a long Leaſe or a ſhort Leaſe is the better? 13,14. to 19,
Value of Houſes out-right, 19,20
How to reckon for taxes, 20
Buying of Lives, 21,22
Rules to calculate the following tables, 23
24

A table to reduce Decimal Fractions of pounds into li. ſh. d. 26
7 tables of purchaſe at the rate of 5, 6, 7 &c. *per Cent.* 31, 32, &c.
The uſe of the tables explained by ſeveral queſtions, 38, 39
4 tables of purchaſe after a more vulgar way, 41, 42
A more exact way to caſt up the worth of a purchaſe, 43, 44
The moſt exact way to caſt up the worth of a Purchaſe, 45, 46
Two tables of purchaſe calculated for every three moneths, 47, 48
More Rules and Examples in uſing all the foreſaid tables, 49 to 53
Of Reverſions, 54
5 tables ſhewing the worth of one pound in Reverſion at moſt rates of Intereſt, 55
A more general table of Reverſions, 56
The demonſtration and uſe of theſe tables, 57, 58, 59
Several Rules and Examples to finde the worth of any Reverſion, 60. to 65
A Plea for Intereſt, 66
Large tables of Intereſt at 6 *per Cent.* from a day to 12 moneths, 68 &c. 75
The uſe of theſe tables, 76
A more exact way to reckon up the Intereſt of any ſum of money, 77, 78

A table of Intereſt for every day in the yeer, 79 to 82
The explanation and uſe of theſe tables, 83 to 90
Of Rebatement, 91,92,93
Monethly tables of Rebatement, from 1 moneth to 24 moneths, 94 &c.
The uſe of theſe tables of Rebatement, 103
In the ſecond Part. to 107
Of meaſures for length, 110
To meaſure Boards, &c. 112
A table of Board meaſure, 115
To meaſure a ſquare field or parcel of Land, 118
To meaſure a triangular or three ſided parcel of land, 120
To meaſure a round piece of Land, 121
To meaſure any ſmall ſection of a greater circle, 123
To meaſure any parcel of land in what form ſoever it lies, and to make a plat thereof 125
To meaſure ſolid Bodies of ſtone timber or ſuch like, 133
A table of timber meaſure for true ſquared timber, 134
A table to make a Ruler for timber meaſure 139
To meaſure timber which is not ſquared exactly, 143

A table for that purpose, 145
To measure round timber, and a discovery of the falshood used therein, 146
A table for the measuring of round timber, 153
To measure tapering timber, and the errour used herein, 155
Observations about Gauging, 160
A table for the Gauging of wine vessels, 164
The use of this table, 165
To measure Wine Vessels by Gauging Line or Rod, 166
To make the said Gauging Line, 170
A more large and exact table for the Gauging of Wine Vessels, 178
Observations in measuring Beer or Ale vessels, 178
A table for Gauging Beer and Ale Vessels, 182
To make a Gauging Rod for Beer and Ale measure, 186
Observations about Weights, 190
Tables of the Assize of Bread, 194
Of Liquid Measures, 197
Comparisons between Weights and Measures, 200
Of Dry Measures 202
Observations about Gold, Silver, and other Metals, 204
Of the weight and measure or Water, 207

A table of Arithmetical Proportions, and the use thereof in most parts of Arithmetick, 210
A table of Accounts, shewing the value of any number of Yards, Ells, or Pounds, &c. of any thing, 222
A Table for buying and selling by the pound, or hundred weight, 230
A table of expences, 233
A table of the Kings of *England*, 235
A Concordance of Yeers, since the beginning of the Reign of Q. *Elizabeth*, 237

Courteous Reader here are in this Impreſſion ſomewhat too many faults eſcaped, which I know not how to excuſe; neither deſire ſo to doe; but rather to make them publique, that ſo they may receive their due correction. If any other faults are found I deſire they may receive the like uſage; and if I have friendly notice of them, I ſhall ſerve them ſo my ſelfe. Alſo I ſhall deſire you to amend ſome of the ruled lines in the Tables, which are not printed well; and adviſe you to draw other lines croſſe the Tables at every fourth or fifth line, which will direct your ſight very much in the ready uſe thereof.

Page 4. *Line* 5. *Read* bring in (but the ſaid *p.* 11. *l.* 11. *r.* But if the houſe be rated, *p.* 14. *l.* 2. value upon a ſhort leaſe, *p.* 16. *l.* 8 and 9 worth little more, *p.* 52. *l.* 4. Reduction and *p.* 55 *l.* 7. Col. 3. for 16 *s.* 19 *d.* read 16 *s.* 9. *d. p.* 60 *l.* 68. for rates *r.* rules, *p.* 68. Intereſt of 9 *li.* for 3 days is 1 *d.* 6 parts. Intereſt of 90 *li.* 3 dayes is 10 *d.* 6 parts. not 1. 10. 65. *p.* 105. *l.* 5. for 900. *r.* 3000 *p.* 112. *l.* 13. for as Inch. *r.* an Inch. *p.* 113. *l.* laſt, add theſe words, ſhewing how many Inches in length fitted, *p.* 115. In the table of Board meaſure, in the laſt part, the Inches of the breadth from 19, are ſet up two lines too high, and ſo reach to 38, which ſhould be

but

but to 36. *p.*118. *l.*4. for ſur, *read* uſe. *p.*121, 126. and in two or three places more for Rod read Rood, *p.*122. *l.* 19. *r.* if you know the circumference, *p.*126. *l.*28. read, in the neereſt place thereto which is in G, *blot out the needleſs words between*, *p.*139. *l.*3. for *p.*47. *r. p.*44. *p.*145. *l.* 11. for 38. *r.*35. *p.*163. *l.*6 & 8. for Se. *r.* To, *p.*174. *l.*laſt, for 03. *r.* 30. for 74. *r.*47. *p.*175. *l.*15. for 8.279. *r.*0. 279. and *l.*18. for 1.400. *r.*0.400. *p.*180. *l.*18. for 365.140. *r.* 36.140. *p.*205. *l.*18. for pence, *r.* piece. *p.*206. *l.*6. for two ſhilling piece, *r.*20 ſhilling piece. *p.*206. *l.*18. for irregular, *r.* regular. *p.*216. The laſt example of *Multiplication* is ſet very confuſedly by a miſtake, but you may correct it; or finde ſeveral other wayes to ſet the figures. *p.*230. the table of buying and ſelling by the hundred weight, ſhould be ſet in the page following.

THE PURCHASERS PATTERN.

IN the buying and ſelling of Land, and in the letting and taking of Leaſes, either of Land or Houſes, there are many things very conſiderable; which may all be reduced to theſe three general heads.

Firſt, to the Law, to make the Bargaine ſure.

Secondly, to Reaſon and Iudgement, to know the nature of the thing you purchaſe.

Thirdly, to Arithmetick, to finde out the true value thereof.

My chiefe purpoſe herein is to ſpeake of this laſt, referring you in the other two, to your own judgement, and the counſel of others: yet becauſe I am loath to let you (who need ſome inſtructions herein, and will be willing to learne) go altogether without, I ſhall briefly ſpeak ſomwhat to each of theſe.

And in the firſt place, as to matter of Law take it as I finde it ſummed up in theſe Verſes.

Firſt, ſee the Land which thou intend'ſt to buy,

Within the Sellers Title clear do lie;
And that no woman yet doth lay claime,
By Dowry, Joynture, or some other name
That may it cumber. Know if bond or free
The Tenure stand, and that from each Feoffee.
It be releas'd. That the Seller be so old,
That he may lawful sell, thou lawful hold.
Have special care that it not Morgag'd lie,
Nor be intailed on Posterity.
Then if it stand in Statute, bound or no.
Be well advis'd what Quit-rent out must go,
What Custome-service hath been done of old
By those who formerly the same did hold.
And if a wedded woman put to sale,
Deal not with her unlesse she bring her Male;
For she doth under Cover-baring go,
Although sometimes some traffique so (we know.)
Thy bargain being made, and all this done,
Have special care to make thy Charter run,
To thee, thine Heirs, Executors, Assignes.
For that, beyond thy life, securely binides.
These things fore-known, and done, you may prevent
Those things rash buyers many times repent.
And yet when as you have done all you can,
If you'l be sure, deal with an honest man.

Much might be said to this in point of law; but neither my skill nor time will afford it. It is the best way for every one, not to

to truſt too much to his own skil, but to uſe the help of ſome skilful Lawyer, and knowing Scrivener. And I ſhall onely adde this, that though the man you deal withall, have the repute of an honeſt man: yet truſt not too much upon that; but be careful to have all the aſſurance made unto you, as if he were your utter enemy, or a very *K.*

In the ſecond place, before you can know the true value of the thing to be purchaſed, you muſt well conſider the nature of the thing, and the caſualties that it may be ſubject to, and ſo according to the goodneſſe and certainty thereof, you muſt caſt up the price at a greater or leſſer rate of profit.

And to this purpoſe in the firſt place, take notice that the Rate allowed for Intereſt money, is the general ground and rule to eſtimate the value of any purchaſe by.

This was formerly in Queen *Elizabeths* dayes allowed to be 10 pound for 100. But in King *James*'s time, it was, upon very good ground brought down to 8 pound for an 100. And now of late, by our preſent State, it is allowed but to take 6 pound Intereſt for an 100. Now as the Intereſt of money falleth, ſo the price of all kinde of purchaſes riſeth. This you may ſee in the following Tables. And it muſt needs be ſo, becauſe the leſſe profit is allowed, the greater

principal muſt be expended to bring in the ſame profit. Thus when money was at 8 in the 100 then 75 pounds would bring in 6 pounds a year, whereas money being but at 6 in the 100, an 100 pounds will bring in but the ſaid 6 pounds a year.

But yet you muſt not think that this Rate allowed for Intereſt money, is the abſolute rule of all Purchaſes; but as formerly, when money went at 8 for an hundred, yet Land was worth 18 years purchaſe: ſo now money is at 6 for the hundred, Land is well worth 20 years purchaſe. And though men who thus lay out their money upon Land, have but five in the hundred profit for their money; yet their may be good reaſons given why men ſhould be willing ſo to do. As,

Firſt, Becauſe though every thing be ſubject to caſualty in this uncertain World, yet an eſtate in Land is leſſe ſubject to danger, and of more ſure continuance, both for a mans own life, and his poſterity after him.

Secondly, It hath been hitherto, and it is like to be ſo ſtill, that the price of money falls cheaper, and the price of Land riſeth dearer; and that not only (as I ſaid before) in proportion to the rate of Intereſt, but in reſpect of the value of the things themſelves; in ſuch wiſe, that a Farme that formerly

merly was worth but 30 pounds a year, is now worth 50 pounds, or more. So that the old Rents of Land, may in a ſhort time be much improved, whereby the Land-Lord may in a ſhort time mend his bargain, if it be any good peny-worth when he bought it.

Thirdly, In point of Piety, many men had rather lay out their money in Land, though with leſſer profit; then let it out to Intereſt: Becauſe Uſury, through the ill practiſes of many, hath gotten ſuch an odious name, and been ſo generally condemned by many godly men.

Fourthly, There is much equity herein. For as men who have greater Stocks, and Trade by Whole-ſale; may live upon a leſſer rate of profit then thoſe who have but ſmall Stocks, and Trade by Retail. So men who have great Eſtates, to buy land therewith; may very well lay out their money at leſſe profit then other men, and yet live better thereof. Thus a man that hath 4000 pounds, may purchaſe therewith 200 pounds a year, and may live better thereupon, though he have but five pounds in the 100 profit for his money; then he that hath an eſtate of 1000 pounds in money, and puts it out to Intereſt at ſix pounds for an hundred, can live of 60 pounds the year-

ly Intereſt thereof. And hereupon the Emperour *Juſtinian* made a Law that Noble men and Earls ſhould take but 4 pounds Intereſt for 100. Artificers might take 8 pounds. Merchant Adventurers 12 pounds, and other men 6 pounds in an hundred.

And thus much for the price of Land in general, here in *England* it is worth 20 years purchaſe. In other Countreys, where money is plenty, and land ſcarce, it may be worth more; as in *Holland* land is worth 30 years purchaſe, and money ſcarce worth 3 or 4 *per Cent.* But in many other places it is worth leſſe. Yea, as I am informed in *Lincoln-ſhire* very good land is ſold for 15 or 16 years purchaſe: theſe things the buyer and ſeller muſt conſider of, and do therein, as their own judgement, and their occaſions, and opportunities offered, allow them the beſt bargain.

IN the next place it may be conſidered, after what Rate Leaſes of Land are fitteſt to be let. And that is according to the preſent Rate of Intereſt money, what ever it be; whether 5, 6, 7, or 8 in the hundred.

For firſt, It is not fit that they ſhould pay more then their money will yield them; becauſe for the moſt part ſuch Purchaſers are men of ſmaller eſtates, and ſuch as, for the

the moſt part, do with much care, coſt and pains, get their Rent for their Land-Lords, who live many times at eaſe. And if their Land-Lord think they have too good a peny-worth, he wants not power and will to make him pay more for his next Bargain.

On the other ſide, it is not fit that theſe Leaſes ſhould be let at any under Rate, both becauſe they are certain, and leſſe hazard therein, then in laying out their money any other way: and alſo, becauſe the Land-Lord himſelfe gives a dearer Rate, and ſo would hereby be too much damnified. And after this Rate you muſt value all other Annuities which are certain, and aſſured by Lands.

THe next thing I ſhall propoſe to your conſideration, is the Rate which is to be obſerved in letting and ſelling of Houſes. And herein it will be very requiſite to conſider of the many Caſualties which Houſes are ſubject to.

As firſt from the Air, they are continually weather-beaten; and ſometimes, by extraordinary windes and tempeſts, much rent and torne; ſo that in a ſhort time they run to decay, if they be not continually kept in good repair.

Secondly, From the water likewise they receive continual damage, even by the ordinary showers of rain, which are subject to soak in and rot, and spoil them, if not carefully prevented: and many times also extraordinary floods and inundations destroyes them in a moment.

Thirdly, Though this destruction by water need not much be feared in many places; yet fire may be justly feared in all: which, if it once get the mastery, is a mercilesse enemy; and this it doth too too often, and is not to be prevented by all our own care and watchfulnesse, proceeding many times from the carelesnesse of a neighbour, or an idle servant.

Fourthly, The Earth it self, though it be their best friend, and for the most part upholds them; yet many times for the sins of the inhabitants, it trembles under them, throwes them down, or swallowes them up. By this means, whole Cities are sometimes destroyed in an instant: and though this seldome happens in our Iland, yet in *Queen Elizabeths* dayes there were three of these Earthquakes, and though, blessed be God, they did no great hurt, yet some they did in this particular.

But passing by all these petty and extraordinary casualties, there is one more which,

which, in my minde, is more to be consider-ed then all the rest; and that especially, if a man buy an house not for his own use and habitation, but to let it out to others. And that is, that many times a man shall meet with an ill Tenant, that will scarce pay his Rent; and sometimes it may stand empty without a Tenant, and so bring in no profit at all; and also hereby it runs more spe-dily to ruine. And this case is so much the more considerable, because it is so ordinary; and for this very reason, an house that stands void, is not worth so much by at least a years purchase, as another house that hath a good Tenant in it; and it is so much the worse if the house stands not in a good place, where it is like to be long without a Tenant: howsoever a year is quickly gone, and a year lost at the beginning, is worth as much as three or foure afterward.

All these things, though men do what they can to prevent them, and shift them off from themselves by Fines and Leases; yet they must needs fall either upon the Land-lord or the Tenant, and many times fall heavy enough upon both.

For these and such like reasons, it was the usual custome, when money was at eight in the hundred, to let Leases of Houses for 21 years, for 7 years purchase. By which reckoning

koning (as you may see by the Tables following) they allowed about 13 in the hundred for the profit of their money to the buyers. For, in the table of 12 in the hundred, one pound yearly rent for 21 years, is worth 7 pounds, 11 shillings 2 pence, which is above 7 years and an halfe purchase, therefore bare 7 years purchase yields more profit, and is much about 13 in the hundred.

Now if this rate of 12 or 13 *per Cent.* profit were thought fit when money was at eight in the hundred; then, now money is at six, such Leases may very well be let after the rate of ten in the hundred. And so one pound yearly Rent to continue 21 years is worth 8 pounds, 12 shillings and 11 pence, that is, 8 years, and an halfe, and somewhat more purchase. And this I suppose to be the fittest rate for most ordinary houses.

But yet since some Houses being new and strongly built, need little or no reparations, and others, being old and decayed, need great and costly reparations, and many times must be partly new built, since these things lie commonly upon the Tenant, the better sort of Houses will be worth more, and the other lesse. So that the prizes of all these leases of Houses, may be reckoned

koned after the rates of 8, 9, 10, or 12, *per Cent.* as the foresaid casualty shall require.

And to conceal nothing from you in this point; the chiefe thing to be looked upon in this particular, is whether the yearly rent of the house be rated at such an easie rate, that the house is very well worth it, and will yield rather more then lesse. In this case, the house may be worth a years or two years purchase more then otherwise. But if the house be ~~bue~~ rated according to its outmost value, it will be a dear peny-worth to give above the rate of 10 *per Centum* for it.

It may perhaps be objected against this, the great cost which men are at in building of Houses, so that if Leases of them yied no better rate, those who are at the cost to build them, will scarce have five or six in the 100 for their money laid out upon them.

To this it may be replyed, that Houses are things from whence the Tenant, for the most part, receiveth little or no profit, being chiefly sleeping holes to defend them from the injury of the weather; for which purpose many times lesse costly houses would serve the turn. And therefore what ever men may lay out upon the building and beautifying of them, for their own pleasure and accommodation, yet it will be the part

of

of every wise builder, to lay out no more thereon, then is fitting and necessary, according to the place it stands in; that so the yearly rent may bring in some considerable profit, at least to the rate of eight in the hundred.

As for publique Buildings, either for strength or ornament, they are not to be measured by so private a Standard.

Also if any well affected persons, or Corporations, having stocks of money lying by them, shall build in convenient places, or Towns wasted by fire, houses somwhat above the degree aforesaid; such men, though they receive lesse profit, yet they deserve more praise.

But as for those that lay out so much upon their private houses, that many times they would be glad to sell them again for half their cost; they may thank themselves for their losse; and may well be accounted foolish Builders, that did not consider before hand, whither their gaine would countervail their charges.

By what hath been said, you may perceive that Leases either of Land or Houses, are the most profitable Tenures for the ordinary sort of men. But yet you may desire to know whether an ordinary Lease of 21 years; or a longer Lease of 40, 50, or 60 years be best.

I ſtart this queſtion, to lay open the errour of many men, who proceed in theſe Bargains without ſufficient knowledge in point of Art. And from hence it is that one concludes that a ſhort Leaſe is moſt profitable, which he thinks thus ſufficiently proved.

Saith he, Suppoſe a man hath 1000 pounds to beſtow upon a Leaſe, if he will purchaſe a Leaſe of 100 years, it will coſt 13 years purchaſe at the leaſt; ſo your 1000 pounds will buy but 77 pounds a year, which doth not amount to the uſe of your money after the rate of eight in the hundred: Whereas, if you will buy a Leaſe of 21 years, you may have it for ſeven years purchaſe, (money being at the foreſaid rate,) ſo your 1000 pounds will purchaſe you a Leaſe of 140 pounds a year, which is 60 pounds a year more then the uſe of your money will come unto. So that in the longer Leaſe you will loſe three pounds a year, and by the ſhorter Leaſe, you will gain three ſcore pounds a year; more then your money will yield at Intereſt.

This reckoning, I confeſſe, is true according to theſe erroneous rules, by which moſt men make their bargains: and ſo for want of better knowledge, oftentimes run themſelves into very great damages. The chief cauſe

cauſe whereof proceeds from mens ſetting too low a price and value upon a Leaſe, and too high a price and eſteem upon a long Leaſe, which is only for lack of Art. And perhaps men may be deceived herein, reaſoning thus with themſelves. If a man gives 7 years purchaſe for a Leaſe of 21 years, it is 7 years before he receives his principal money again, and then he hath but 14 years more for the increaſe thereof, and in all the 21 years he receives his money laid out but three times over: Whereas, a man giving 13 years purchaſe for a Leaſe of 100 years; though it be 13 years before he receive his principal in again, yet then he hath 87 years of clear profit, and in the whole 100 years, receives his money laid out almoſt eight times over.

But this reaſon deceives men in conſidering too much of the often return of the money, and too little of the length of the time. For he that hath a Leaſe of 21 years, for ſeven years purchaſe; it is true, he can in that 21 years make but a threefold return of his money: but then after thoſe 21 years, he may make ſuch another bargain for 21 years more, and ſo return his money three times more. And ſo continuing to do, in 105 years he may return his principal laid out 15 times over, ten times whereof will be clear.

clear gains; whereas the other ſhall gain little more then half ſo much.

Thus you ſee, if you count aright, it is manifeſt there is a very great diſ-proportion between the price of the long Leaſe, and the price of the ſhort Leaſe; which ought not to be ſo. For what reaſon is there but that a man ſhould have as good a peny-worth in a long Leaſe, as in a ſhort one: And I ſuppoſe the intent both of buyer and ſeller is that it ſhould be ſo: but all the fault lies in thoſe falſe Rules and cuſtomes; and may all with much right and reaſon be amended by Art.

The truth therefore is, the ſhort Leaſe is much undervalued; and the long Leaſe is much over-valued. For in the ſhort Leaſe, the buyer hath after 13 in the hundred allowed him for the profit of his money; whereas in the long Leaſe he hath not after 8. And the reaſon of this over-valuing the long Leaſe, is either for want of skill, or conſideration what the money in that time, at Intereſt upon Intereſt will come to. Indeed all men have not time or skill to caſt it up, and there is much want of Tables of ſufficient length for this purpoſe, moſt Tables not exceeding 31 years. And this was the chief reaſon of my writing, and therefore I have inlarged my Tables to 100 years apiece;

apiece: yet not all in single years; because the difference would be but small, in many of the years, and may be supplied well enough by estimation and proportion.

Now by these Tables you may plainly see, that however men may esteem of a long Lease, yet in most of these things a Lease of 100 years is worth more then a Lease of 60 years; and a Lease of 60 years is worth little more, then a Lease of 31 years.

As for Example, in the Table of ten in the hundred, the price of one pound to continue.

Twenty one years is.	8	12	11
Thirty one years.	9	7	1
Threescore years.	9	19	4
And 100 y. not full.	10	0	0

But you will say, this is very strange, and few men think so.

I grant it, but the reason hereof is, because men do not consider the profit which their money may yield them in so many years. For though it be not allowed to take ten in the hundred yearly for money; yet those who have any employment for their money otherwayes, may very well make at least ten in the hundred of it; and after this reckoning, one pound in 60 years will come to 380 pounds, and in 100 years to 13781 pounds; and on the other side, the Reversion

ſion of one pound 60 years hence, at this rate, is not worth a peny, and 100 years hence it is not worth the fourteenth part of a farthing.

By this you may ſee there is great need of Art which like an equal Umpire, between man and man, may declare the true value of any Leaſe for any time, ſo that one bargain ſhall not be too deare, and another too cheap, but each have a due proportion to the time of years; and ſo in this reſpect, there is no more advantage or profit in one kinde of Leaſe more then in another. But he that will not be ruled by Art, but will follow theſe, or ſuch like, falſe Rules, muſt (you ſee of neceſſity) either wrong himſelf or others, yea, and before he is aware, may wrong himſelf as ſoon as another, either in buying or ſelling ſuch bargains.

In anſwer therefore to this queſtion: this falſe concluſion and unjuſt practiſe being taken away, ſo that a man may have as good a penny-worth in a long Leaſe as in a ſhort Leaſe; it will plainly appear, that a long Leaſe for the moſt part is the beſt (at leaſt) for the Tenant. For ſuppoſe it be a Leaſe of Land, the Tenant having a long Leaſe, may and will ſtrive to improve it what he can, becauſe he is in hopes long to enjoy it, and receive the benefit thereof. And

all

all this will be no great hurt to the Landlord, unleſſe he be too greedy after great Fines, or loves alwayes to be raiſing his Tenants rent, and ſo many times as they impoveriſh their Tenants, their Tenants impair their Land.

Indeed for Leaſes of houſes the caſe is more difficult, for they many times cannot well ſtand out a long Leaſe; but yet if a man muſt take ſuch an houſe that will require new building either in whole or in part, he had better then have a long Leaſe thereof, that ſo he may the longer and more certainly enjoy it, after his coſt and pains beſtowed upon it.

On the other ſide, when a man hath a ſhort Leaſe either of land or an houſe, he dares not do what he would to improve it, leſt his Rent ſhould be raiſed, or he turned out by the greedy covetouſneſſe of his Land-lord, or the envious greedineſſe of ſome evil neighbour.

If any one hath an ill bargain of theſe long Leaſes, it is the Landlord, and that is not ſo much becauſe he ſhall receive ſo few Fines, but rather by his taking too great Fines of his Tenants, and ſo by the Fine to cut off ſo much the more of his yearly Revenue.

For you ſee that for all the money the Land-

Landlord receives for the Fines of thoſe Leaſes, he rebates his Tenant for it, not onely after the rate of ſimple Intereſt, but at Intereſt upon Intereſt, at ſix, eight or ten in the hundred, which you ſee increaſeth ſo faſt in 50 or 60 years, that it eats out almoſt all the principal Rent, and makes the latter half of the years to increaſe ſo little in value.

It is the beſt way therefore for Landlords, in theſe Leaſes, not to take over great Fines, but ſuch as may be onely ſufficient to binde their Tenants to keep to their bargains, and make them careful to perform their covenants, leſt they forfeit their Leaſes, and loſe their Fines. And this is the beſt and moſt politick end of theſe manner of Fines. And this will be beſt for the Tenant, and no hurt to the Landlord.

THere is one queſtion more about the buying of houſes, and that is, that if ſuch long Leaſes of them do yield no more, what may be the value of them to buy them out right?

To judge the better of this, you muſt conſider the ſtrength and goodneſſe of the houſe, and the Materials of which it is built; whether Timber, Brick, or Stone; In which reſpects ſome houſes are able to ſtand

ſtand many ſcores (if not ſome hundreds) of years more then others, and when it comes to be pull'd down, theſe materials may be worth ſomewhat, or ſerve to the new building thereof again. Now he that hath onely a Leaſe (though it be a long Leaſe) yet he hath none of this profit, but is bound to be at charge to uphold and maintain it in as good order as it was delivered to him.

Again, ſuppoſe theſe things are little worth, yet the very ſpace and quantity of ground whereon the houſe ſtands, may in many places be very conſiderable, inſomuch that it is ordinary for men to build upon a Leaſe of 31 years, and yet pay a good reaſonable Rent to their Landlord beſides. Upon theſe accounts, the purchaſe of an houſe out-right, may well be worth two or three years purchaſe, more then a Leaſe of an hundred years. So that though the Leaſes be not worth above 10 years purchaſe: yet the Fee-ſimple of an houſe may be worth 12 or 13 years purchaſe.

THere is another thing ſomewhat conſiderable in the buying of Land and houſes, and that is the Taxes which for the preſent lie heavy upon them. But this I hope by Gods bleſſing in a ſhort time will be taken

ken off, so that it will be needlesse to give any rules about it. Yet to satisfie men in this, I shall set down this briefly. First, the taxes being known what they come to yearly, may be substracted from the outmost yearly value of the Land or house; and so what remaines, you may safely purchase according to the rules aforesaid.

Yet since they may be taken off in good time, I would wish no man to be over-hasty to sell thus; but at least to divide the burthen of these taxes, between his Customer and himself.

THere is another way of purchasing Land or Houses, by buying Lives therein, and this is the ordinary rule for it. One Life in any thing is accounted of equal worth to a Lease of seven years. Two Lives are worth as much as a Lease of 14 years. Three Lives are worth as much as a Lease of 21 years. And so still increasing by seven years for every Life.

But this way of reckoning seemes to me somwhat unequal, since one or two may live as long as eight or ten, why should there be so great a difference accounted? I confesse a mans life is very uncertain, and therefore I would wish every one to take heed how they deale in such away of purchasing:

chaſing : but yet conſidering on the one ſide, that by this means one is provided for as long as he lives, and when he is dead he need take no care : and on the other ſide, that if he be any thing young, or likely to live at all, he may live 20 or 30 years, what reaſon is there that the ſeller ſhould be at ſo much hazard, as to venture 30 to 7 for a ſingle Life?

Again, though two are better then one, *A threefold Cord is not eaſily broken*, yet it is not altogether ſo in mens lives, but many times three or four may die ſooner then one, herein the buyer runs ſome hazard, which though with more reaſon then the ſeller before, yet it is fit he ſhould have ſome conſideration for it.

Therefore in my minde it were more equal, if a ſingle life were rated as a Leaſe of 12 years, or 10 at the leaſt, and ſo for any more Lives to decreaſe one year for every Life. And ſo they will be worth, as in this little Table.

1	*Lives are of equal worth to a Leaſe of theſe Years, according to the foreſaid Rules and Tables.*	12	10
2		23	19
3		33	27
4		42	34
5		50	40
6		57	*Or* 45
7		63	49
8		68	52
9		72	54
10		75	55
11		77	
12		78	

Thus much for theſe pre-conſiderations, I ſhall now ſet the Tables before you, ſhewing you the true value of any thing according to theſe Rules and Rates.

But in the firſt place, I ſhall ſet before you the manner of the conſtruction and calculation of theſe tables, that ſo I may leave no juſt exceptions againſt what I have ſaid, or ſhall ſay in this point.

The beſt and moſt artificial way to make theſe Tables, is to finde certain numbers in continual proportion decreaſing, according to the rate of the Intereſt propounded, which Numbers may ſhew the true worth of one pound principal at the end of any number of years. And then by addition of all theſe numbers one to the others, the foreſaid

said Table of Purchases from year to year is produced, which because they come out all in *Decimals* of pounds, you may afterward reduce into pounds, shillings, and pence.

Thus let the rate of the Interest propounded be *6* in the 100, these numbers will be thus found,

As 106 *li.* : *to* 100 :: 1 *li.* : *to* 0,9434

You may increase these fractions as far as you will, for the more exactnesse. And thus much is 1 pound worth at the end of one year.

Then for the second year,

As 106, to 100 ; so 9434, to 8900 : which is the worth of one pound at the end of two years, so these two added together make 1,8334, which is the worth of one pound Annuity to continue two years.

So again do for the third year.

As 106 to 100 ; so, 8900 to ,8396. which added to the former makes 2,6730 which is the value of three years.

And so you must do for every other year, as long as you make your Table for.

As you may see by this short Table of 5 years at *6* in the hundred.

The decreaſe or worth of the Reverſion.	The worth of the Purchaſe by Addition.
1 ,9434	0,9434
2 ,8900	1,8334
3 ,8396	2,6730
4 ,7921	3,4651
5 ,7472	4,2123
6 ,7050	4,9173
7 ,6651	5,5824

Thus there is nothing difficult, but onely the reducing of their numbers into the more known value of pounds, ſhillings, and pence, which may be performed by this Table.

Note that I have abreviated this table to four places, conſidering this will be ſufficient exactneſſe, ſhewing the true value of one pound to the tenth part of a farthing; and it is ſo much more eaſie in many other propoſitions, which I have ſhewed to be wrought thereby. Alſo to make it more ready for you, I have ſet down the fractions from a farthing to a ſhilling in ſingle farthings.

A Table of Decimal Fractions, shewing the proportion of any number of shillings, pence, or farthings to a pound; The pound being divided into 10000 parts.

shill.	parts	d.	q.	parts	d.	q.	parts
19	9500	11	3	0490	5	3	0240
18	9000	11	2	0479	5	2	0229
17	8500	11	1	0469	5	1	0219
16	8000	11	0	0458	5	0	0208
15	7500	10	3	0448	4	3	0198
14	7000	10	2	0437	4	2	0188
13	6500	10	1	0427	4	1	0177
12	6000	10	0	0417	4	0	0167
11	5500	9	3	0406	3	3	0156
10	5000	9	2	0396	3	2	0146
9	4500	9	1	0385	3	1	0135
8	4000	9	0	0375	3	0	0125
7	3500	8	3	0365	2	3	0115
6	3000	8	2	0354	2	2	0104
5	2500	8	1	0344	2	1	0094
4	2000	8	0	0333	2	0	0083
3	1500	7	3	0323	1	3	0073
2	1000	7	2	0312	1	2	0063
1	0500	7	1	0302	1	1	0052
		7	0	0292	1	0	0042
		6	3	0281	0	3	0031
		6	2	0271	0	2	0021
		6	1	0260	0	1	0010
		6	0	0200	0	0	0000

Or if you like not these decimal Fractions, you may reduce the one pound into pence or farthings, and work as before. Thus if in pence.

As 106*li.* to 100 *li.* so 240 *d.* to 226 *d.* $\frac{44}{106}$

Which reduced into shillings and pence, is 18 shillings, 10 pence, 2 farthings *fere*.

Or if you reduce the 20 shillings into farthings,

As 106*li.* to 100*li.* so 960*q.* to 905*q.* $\frac{70}{106}$

Which reduced, is as before 18 shillings, 10 pence, 2 farthings, *fere*.

But in this if you proceed to make the Table for many years, you must have some respect to the fraction left; which is best by adding a cypher or two to the Divident, and so they will come in tens or hundred parts of a peny or farthing.

Now these Tables of Reversion being added together, make up the Tables of Purchase. But I have not expressed these Tables of Reversion; because I have made little use of them, onely in making the other Tables. If any would make use of them, or any part of them, they may easily take them out of the Tables of Purchase by Substraction, as I shall shew in its place.

But because this way of calculating these Tables, is very tedious, and subject to errour, by reason of the many divisions and

additions, if there be not great care had therein ; and one fault herein may produce many : those who have skill in the use of Logarithms may thereby finde out the true value of any thing for any number of yeares, without respect had to the former years, which will be a shorter way, and serve as a proofe to the Tables, in case of any doubt.

As now for Example.

Let it be required to know the true value of a Lease of land to continue seven years after the rate of six in the hundred.

First, take the Logarithme of 100, from the Logarithme of 100 and the rate of Interest added together, which in this example is 106.

Secondly, multiply this Logarithme by the number of years; which in this example is 7.

Thirdly, divide 100 by the rate of the Interest, which is 6, and it will produce 16, 6667 ; then take the Logarithme hereof, and adde it to the former Logarithme, the product whereof will yield the Logarithme of the Arrerages with the said summe for that time.

Fourthly, finde out the true number of these Arrerages, & out of them subtract the proportional part of 100 before found, according

cording to the rate of the Intereſt; ſo you ſhall have the bare Arrerages for that proportional part.

Laſtly, take the Logarithme of theſe laſt Arrerages, and ſubſtract from them the logarithme found by the Multiplication of the years (in the ſecond rule) ſo you ſhall have the logarithme of the true value of theſe Arrerages in ready money; the true number whereof being found out and reduced into pounds, ſhillings and pence, may be uſed as any number in the Tables.

106 *Logarithme*	2,0253058
100 *Logarithme*	2,0000000
Reſts by Subſtraction	0,0253058
Which multiplied by 7	7
Comes to	0,1771406
16,6667 *Logarithme add.*	1,2218287
Yields	1,3989693

This is the Logarithme of 25,0605

From which 16,6667 *ſubtracted,*

Reſts 08,3938	
8,3938 *Logarithme*	0,9239595
Log. by Multiplication of Years ſubtracted	0,1771406
Reſts	0,7468189

Which is the logarithme of 5,5824, as in the little Table aforesaid, which reduced, is 5 pounds, 11 shillings, 7 pence, 3 farthings, and somewhat more, which I have set down in my Table, 5 pounds, 11 shillings, 8 pence, not accounting any Fractions under a peny

Tables shewing the true value of one pound yearly Rent, to continue any number of years under 31, and from thence to 100 years, increasing by every tenth year, after the Rates of 5, 6, 7, 8, 9, 10, and 12 in the hundred, reckoning Interest upon Interest

Purchase of Annuities at 5 per Centum.

The number of Years to be purchased	The worth of one pound Annuity. li.	sh.	d.
1	0	19	00
2	1	17	02
3	2	14	05
4	3	10	11
5	4	06	07
6	5	01	06
7	5	15	09
8	6	09	03
9	7	02	02
10	7	14	03
11	8	06	02
12	8	17	03
13	9	07	11
14	9	18	00
15	10	07	08
16	10	16	09
17	11	05	06
18	11	13	10
19	12	02	09
20	12	09	03
21	12	16	05

The number of Years to be purchased.	The worth of one pound Annuity. li.	sh.	d.
22	13	03	03
23	13	09	10
24	13	16	00
25	14	01	11
26	14	07	06
27	14	12	11
28	14	18	00
29	15	02	10
30	15	07	05
31	15	12	00
In tens of years			
40	17	02	05
50	18	05	01
60	18	18	07
70	19	06	10
80	19	11	11
90	19	15	00
100	19	16	00

Purchase of Annuities at 6 per Centum.

The number of Years to be purchased	The worth of one pound Annuity. li.	sh.	d.
1	0	18	10
2	1	16	08
3	2	13	06
4	3	09	04
5	4	04	03
6	4	18	04
7	5	11	08
8	6	04	02
9	6	16	00
10	7	07	02
11	7	17	09
12	8	07	08
13	8	17	01
14	9	05	11
15	9	14	03
16	10	02	01
17	10	09	07
18	10	16	07
19	11	03	02
20	11	09	05
21	11	15	03

The number of Years to be purchased.	The worth of one pound Annuity. li.	sh.	d.
22	12	00	10
23	12	06	01
24	12	11	00
25	13	15	08
26	13	00	01
27	13	04	03
28	13	08	01
29	13	11	10
30	13	15	04
31	13	18	07
	In tens of years		
40	15	00	08
50	15	14	06
60	16	03	03
70	16	07	01
80	16	10	02
90	16	11	07
100	16	12	04

Purchase of Annuities at 7 per Centum.

The number of Years to be purchased.	The worth of one pound Annuity. li.	sh.	d.
1	0	18	08
2	1	16	02
3	2	12	06
4	3	7	09
5	4	2	00
6	4	15	04
7	5	07	09
8	5	19	05
9	6	10	04
10	7	00	06
11	7	10	00
12	7	18	10
13	8	7	02
14	8	14	11
15	9	02	02
16	9	08	11
17	9	15	03
18	10	01	01
19	10	06	08
20	10	11	11
21	10	16	08

The number of Years to be purchased.	The worth of one pound Annuity. li.	sh.	d.
22	11	01	3
23	11	05	5
24	11	09	5
25	11	13	1
26	11	16	6
27	11	19	6
28	12	02	9
29	12	05	7
30	12	08	2
31	12	10	8
In ten's of years			
40	13	06	7
50	13	15	8
60	14	00	9
70	14	03	2
80	14	04	5
90	14	05	1
100	14	05	5

Purchase of Annuities at 8 per Centum.

The number of Years to be purchased.	The worth of one pound Annuity. li.	sh.	d.
1	0	18	06
2	1	15	08
3	2	11	06
4	3	06	03
5	3	19	10
6	4	12	05
7	5	04	01
8	5	14	11
9	6	04	11
10	6	14	01
11	7	03	09
12	7	10	08
13	7	18	01
14	8	04	10
15	8	11	02
16	8	17	00
17	9	02	05
18	9	07	05
19	9	12	01
20	9	16	04
21	10	00	04

The number of Years to be purchased.	The worth of one pound Annuity. li.	sh.	d.
22	10	04	0
23	10	07	5
24	10	10	7
25	10	13	6
26	10	16	3
27	10	18	9
28	11	01	0
29	11	03	2
30	11	05	2
31	11	07	0
In Tens of years			
40	11	18	06
50	12	04	08
60	12	07	06
70	12	08	10
80	12	09	06
90	12	09	09
100	12	09	11

Purchase of Annuities at 9 per Cent. anno 1

The number of Years to be purchased.

	li.	s.	d.
21	9	08	10
22	9	11	5
23	9	14	1
24	9	16	8
25	9	18	7
26	9	20	8
27	10	02	8
28	10	04	8
29	10	06	8
30	10	08	8
31	10	10	10
32	10	13	1
33	10	15	2
34	10	17	3
35	10	19	4
36	10	21	5
37	10	23	6
38	10	25	7
39	10	27	8
40	10	29	9
50	10	19	03
60	11	00	10
70	11	01	08
80	11	02	00
90	11	02	07
100	11	02	02

The number of Years to be purchased.

	li.	s.	d.
1	0	18	04
2	1	15	02
3	2	16	08
4	3	04	08
5	3	12	09
6	4	02	08
7	5	00	08
8	5	10	08
9	5	19	11
10	6	08	04
11	6	16	01
12	7	03	02
13	7	08	09
14	7	15	09
15	8	01	03
16	8	06	03
17	8	10	11
18	8	15	01
19	8	19	00
20	9	02	07
21	9	05	10

The number of Years to be purchased.

The number of Years to be purchased.

Purchase of Annuities at 10 per Centum.

The number of Years to be purchased.	The worth of one pound Annuity. li. sh. d.
1	0 18 02
2	1 14 08
3	2 09 08
4	3 03 04
5	3 15 09
6	4 07 01
7	4 17 04
8	5 06 08
9	5 15 01
10	6 02 10
11	6 09 09
12	6 16 03
13	7 02 00
14	7 07 04
15	7 12 01
16	7 16 05
17	8 00 05
18	8 04 00
19	8 07 03
20	8 10 03
21	8 12 11

The number of Years to be purchased.	The worth of one pound Annuity. li. sh. d.
22	8 15 5
23	8 17 7
24	8 19 8
25	9 01 6
26	9 03 2
27	9 04 8
28	9 06 1
29	9 07 4
30	9 08 6
31	9 09 7
	In tens of years
40	9 15 07
50	9 18 04
60	9 19 04
70	9 19 09
80	9 19 11
90	9 19 11
100	10 00 00

Purchase of Annuities at 12 per Centum.

The number of Years to be purchased.	The worth of one pound Annuity. li.	sh.	d.
1	0	17	10
2	1	13	10
3	2	08	03
4	3	00	09
5	3	12	01
6	4	02	05
7	4	11	03
8	4	19	04
9	5	06	06
10	5	13	00
11	5	18	09
12	6	03	10
13	6	08	05
14	6	12	06
15	6	16	02
16	6	19	05
17	7	02	04
18	7	04	11
19	7	07	03
20	7	09	04
21	7	11	02

The number of Years to be purchased.	The worth of one pound Annuity. li.	sh.	d.
22	7	13	10
23	7	14	04
24	7	15	08
25	7	16	10
26	7	17	10
27	7	18	10
28	7	19	08
29	8	00	05
30	8	01	01
31	8	01	08
In tens of years			
40	8	04	10
50	8	06	00
60	8	06	06
70	8	06	07
80	8	06	08
90			
100			

The Use of these Tables.

First, to know the price of any Annuity, to continue any number of years.

Having, according to the former observations, considered the nature of the thing you intend to buy, and so found out after what profit you may fitly lay out your money upon it, whether at 5, 6, 7, 8, 9, or 10 in the hundred, according to the certainty or uncertainty of the thing; then to cast up what the value of the purchase will be, according to that rate, you must do thus.

First, finde the rate of the gain you would have for your money at the head of the Table, and finde the years of the continuance of the Lease or Annuity on the side of the Table, and in that line under the foresaid rate, you shall finde what the purchase of one pound a year, to continue the said number of years is worth; by the which, with a little addition, you may find the true value of any other prized yearly income, whether it be little or great.

As for Example.

What is a Lease of ten pounds yearly value, to continue 21 years, worth in ready money

money, after the rate of six in the hundred interest.

By the Table you see that one pound a year to continue 21 years, after the said rate of six for the hundred, is worth 11 pound, 15 shillings, 3 pence. So then ten pound a year is worth ten times as much, which may be thus easily found.

Ten times 11 *pound is*	110*li.*	00*s.*	00*d.*
Ten times 15 *shillings is*	007	10	00
Ten times 3 *pence is*	000	02	06
In all	117	12	06

Which is the value of the things desired. The like you may do by any other prized Annuity for any other time, and at any other rate of profit for your money, as the nature of the thing requires.

Thus the Lease of an house for 21 years, being reckoned by the Table of 10 pound *per Cent.* for one pound or 20 shillings Annuity is worth 8 pound, 12 shillings, 11 pence; therefore 10 pound *per Annum* is worth ten times as much, which you may reckon as before,

Ten times 8 *pound is*	80	0	0
Ten times 12 *shillings is*	06	0	0
Ten times 11 *pence is*	00	9	2
In all	86	9	2

Which is the value of the ſaid Leaſe.

But becauſe men uſually reckon bargains of this nature by the yearly revenue of the thing, and uſe to ſay, ſuch a thing is worth ſo many years purchaſe; this may alſo plainly and truly be done by the foreſaid Tables: and though this way cannot be ſo exact as the other, yet for cuſtome-ſake take it thus.

The Tables are exactly caſt up for one pound yearly revenue, at each of the ſaid rates, ſo that in the ſummes ſet down therein, for every pound or 20 ſhillings you muſt reckon one years purchaſe; for ten ſhillings, half a years purchaſe, for five ſhillings, a quarter of a years purchaſe; and ſo for any ſumme under, proportionally.

But becauſe I would make things as plain as I could to every one, I have here reduced ſome of the moſt neceſſary tables aforeſaid into years, and parts of a year, dividing the year into 12 parts or moneths, which will be exact enough in moſt bargaines.

Tables of Purchasing.

This Table is fitte to be used onely in the purchase of Freehold Land.

At 5 per Cent. year. to be purchas.	the value in year. moeth.		At 6 per Cent. year. to be purchas.	the value in year. moeth.	
1	0	11	1	0	11
2	1	10	2	1	10
3	2	9	3	2	8
4	3	7	4	3	6
5	4	4	5	4	3
6	5	1	6	4	11
7	5	9	7	5	7
8	6	6	8	6	2
9	7	1	9	6	10
10	7	9	10	7	4
11	8	4	11	7	11
13	9	5	13	8	10
15	10	5	15	9	9
17	11	3	17	10	6
19	12	1	19	11	2
21	12	10	21	11	9
23	13	6	23	12	4
25	14	1	25	12	9
27	14	8	27	13	3
29	15	2	29	13	7
31	17	7	31	13	11
41	17	1	41	15	1
51	18	3	51	15	9
61	18	11	61	16	2
71	19	4	71	16	5
81	19	7	81	16	6
91	19	9	91	16	7
Fee simp.	20	0	Fee simp	16	8

This Table may to be used in the purchase of Copihold-Land, or in Leases Land.

At 8 per Cent.			At 10 per Cent.		
year. to be purchas.	the value in year. mõeth.		year. to be purchas.	the value in year. mõeth.	
1	0	11	1	0	11
2	1	9	2	1	9
3	2	7	3	2	6
4	3	4	4	3	2
5	4	0	5	3	9
6	4	7	6	4	4
7	5	2	7	4	11
8	5	9	8	5	4
9	6	3	9	5	9
10	6	9	10	6	2
11	7	2	11	6	6
13	7	11	13	7	1
15	8	7	15	7	7
17	9	1	17	8	0
19	9	7	19	8	4
21	10	0	21	8	11
23	10	4	23	9	1
25	10	8	25	9	3
27	10	11	27	9	4
29	11	2	29	9	6
31	11	4	31	9	9
41	11	11	41	9	11
51	12	3	51	9	11
61	12	4	61	10	0
71	12	5	71	10	0
81	12	6	81	10	0
91	12	6	91	10	0
Fee simp.	12	6	Fee simp	10	0

This Table may be vsed in the purchase of Leases of Land, and of some Houses.

This Table is fitteſt to be vsed in the purchasing of Leases of Houses.

Thus the former queſtion being demanded, you ſhall finde by theſe tables, that a Leaſe of 21 years, reckoned after the rate of *6 per Cent.* is worth 11 years and nine moneths, or 3 quarters of a years purchaſe. So that the yearly rent of the thing being 10 *li.* the value will be thus found.

Eleven times 10 *li. is*	110*li.*	00	00
3 *quarters of* 10 *li. is*	7	10	00
In all	117	10	00

And this is very neer the former price, and though not altogether ſo exact, yet will ſerve in moſt bargains of this nature.

Though either of theſe ways be exact enough for moſt men, and moſt queſtions of this nature; yet if any deſire to be more exact, they will finde ſome trouble, when either the Annuity or the numbers in theſe Tables do not make even pounds, or at leaſt common and known parts of a pound. In this caſe therefore if you will be curious to know the preciſe value, you muſt have recourſe to the Table of Decimal Fractions, *pag.* 26. and thereby reduce both the price of the Annuity, and the price of the purchaſe thereof ſet down in theſe Tables, into thoſe fractions; and ſo multiplying one by the other, and reducing the product there-

of

of againe by the ſaid Decimall Table, you ſhall have the true value of the purchaſe exactly.

Thus, let the Annuity be worth 55 pound, 12 ſhillings, 6 pence, and you deſire to know the value thereof for 21 years after the rate of ſix *per Centum*.

This Annuity reduced by the Decimal Table, will be 55 *li.* 6250 *p.* and the Table ſhewes the worth of one pound for 21 years is 11 pound, 15 ſhillings, 3 pence, which reduced likewiſe is 11 *li.* 7625 *p.* now theſe two muſt be multiplied each by other; to which purpoſe ſet theſe two numbers thus.

11.7625	
55.6250	
588	1250
2352	50
70575	0
588125	
588125	
654.2890	6250

All the difficulty now is in finding out the value of this product. Therefore obſerve firſt, that all the figures which are beyond the pounds, or Integers in the Multiplicator,

tor, are ſeparated by the point (.) to diſtinguiſh them; and under this point there muſt be a perpendicular line drawn to cut off all the figures under them as uſeleſſe.

Then from this line account fourfigures more in the product, (according to the places of the decimal Table) and there make a prick at 4; ſo the product appears to be *654 li. 2890.* that is, 654 pound, 5 ſhillings, 9 pence, 2 farthing.

Or elſe to be more ſure, caſt it up as neer as you can the former way; and ſo you ſhall ſee whether 2, 3, or 4 of the firſt figures of the product ſtand for pounds, and the four next take for the fraction.

Some yet more curious, would have theſe tables calculated, not only to ſhew the value of purchaſes in whole years (as the former tables do) but for every three Moneths. And though the difference will not be great, yet there is ſome reaſon for it, for the Rent of land or houſes being paid every quarter or half year, the buyer hath the benefit of the firſt quarters rent, for three quarters of a year; of the ſecond quarters rent, for half a year, and of the third quarters rent, for a quarter of a year, all which the ſeller looſeth, in ſelling by the former tables.

Therefore, as I have for the uſe of the common ſort of men, made the former tables

bles as plain I could, not having reſpect to this exactneſſe, becauſe no man is tyed to make his bargaine exactly according to theſe rules, but only to learn hereby at what rate of profit he buys or ſells: ſo for the ſatisfaction of thoſe who are more skilful, I have calculated theſe two tables, ſhewing what one pound yearly rent to be paid quarterly is worth, any term of years or quarters under 21 years, the one at *6 per Cent.* the other at *8 per Cent.* theſe two being the moſt neceſſary in this caſe, and by which you may have ſome gueſſe of the other rates.

The

The value of the purchase of Annuities which are to be paid every 3 moneths at 6 per cent.

years	quart.	y. par. or li. parts	years	quart.	y. par. or li. parts	years	quart.	y. parts li. parts
0	1	0,2463	7	1	5,8432	14	1	9,5332
	2	0,4890		2	6,0039		2	9,6387
	3	0,7280		3	6,1614		3	9,7425
1	0	0,9636	8	0	6,3167	15	0	9,8448
	1	1,1956		1	6,4696		1	9,9456
	2	1,4243		2	6,6203		2	10,0449
	3	1,6495		3	6,7688		3	10,1428
2	0	1,8715	9	0	6,9150	16	0	10,2392
	1	2,0901		1	7,0592		1	10,3342
	2	2,3055		2	7,1011		2	10,4277
	3	2,5177		3	7,3410		3	10,5199
3	0	2,7268	10	0	7,4788	17	0	10,6108
	1	2,9328		1	7,6146		1	10,7002
	2	3,1358		2	7,7484		2	10,7884
	3	3,3358		3	7,8802		3	10,8753
4	0	3,5328	11	0	8,0100	18	0	10,9608
	1	3,7269		1	8,1379		1	11,0452
	2	3,9181		2	8,2640		2	11,1282
	3	4,1065		3	8,3881		3	11,2100
5	0	4,2921	12	0	8,5105	19	0	11,2907
	1	4,4750		1	8,6310		1	11,3701
	2	4,6551		2	8,7497		2	11,4484
	3	4,8327		3	8,8667		3	11,5255
6	0	5,0075	13	0	8,9820	20	0	11,6014
	1	5,1798		1	9,0955		1	11,6763
	2	5,3496		2	9,2074		2	11,7500
	3	5,5168		3	9,3177		3	11,8227
7	0	5,6816	14	0	9,4262	21	0	11,8942

The value of the purchase of Annuities which are to be paid every 3 moneths at 8 per cent.

years.	quar.	y. par. or li. parts	years.	quar.	y. par. or li. parts	years.	quar.	y. par. or li. parts
0	1	0,2452	7	1	5,5031	14	1	8,5711
	2	0,4858		2	5,6435		2	8,6530
	3	0,7218		3	5,7812		3	8,7333
1	0	0,9532	8	0	5,9163	15	0	8,8121
	1	1,7863		1	6,0487		1	8,8894
	2	1,4031		2	6,1787		2	8,9653
	3	1,6216		3	6,3062		3	9,0398
2	0	1,8359	9	0	6,4313	16	0	9,1126
	1	2,0461		1	6,5539		1	9,1842
	2	2,2524		2	6,6743		2	9,2542
	3	2,4547		3	6,7923		3	9,3484
3	0	2,6531	10	0	6,9081	17	0	9,3909
	1	2,8478		1	7,0216		1	9,4572
	2	3,0388		2	7,1334		2	9,5222
	3	3,2261		3	7,2425		3	9,5859
4	0	3,4099	11	0	7,3492	18	0	9,6485
	1	3,5901		1	7,4546		1	9,7099
	2	3,7669		2	7,5580		2	9,7701
	3	3,9404		3	7,6592		3	9,8291
5	0	4,1105	12	0	7,7585	19	0	9,8871
	1	4,2775		1	7,8584		1	9,9689
	2	4,4412		2	7,9514		2	9,9996
	3	4,6018		3	8,0451		3	10,0543
6	0	4,7593	13	0	8,1371	20	0	10,1079
	1	4,9139		1	8,2272		1	10,1606
	2	5,0654		2	8,3157		2	10,2122
	3	5,2127		3	8,4025		3	10,2626
7	0	5,3600	14	0	8,4875	21	0	10,3125

The use of these tables is the same with the former, only this for the more ready and exact use is cast up in pounds, and decimal parts of pounds, which you may reduce by the decimal table, *pag.* 26.

For Example.

If you would know the value of the foresaid Lease of ten pounds a year, to continue twenty one years, and to be received quarterly, after the rate of 6 *li.* per *Cent*, you shall finde by this table that,

	li.	*parts.*
One pound yearly for 21 *years is worth*	11	8942
This multiplied by 10, *the Rent of the purchase being* 10 *li. per Annum, makes.*	118	9420
	li.	*sh.* *d.*
Which reduced by the decimal Table is	118	18 10
Where as the price by the former table pag. 32. *was found to be*	117	12 06
The difference being	001	06 04

There is another very necessary question easily resolved by these Tables, and that is, when any one doth ask of you such a summe of money, or so many years purchase for a parcel of land, lease, or house, to know what profit he allowes you for your money.

As now, Suppose you may have a lease of an house for 21 years, for 8 years and an half purchase, what profit doth your money yield you?

For this purpose; first, you must finde the number of years in the sides of the Tables, and look in the several Tables until you finde the said summe demanded, or the neerest you can finde to it, then at the head of that Table, you shall finde the rate of the profit which your money brings you in

Thus, if according to this example, you look over all the tables, for eight years and an half purchase, that is 8 pounds, 10 shillings in the line of 21 years, you shall finde in the table of 10 *per Centum*, at 21 years 8 pounds, 12 shillings, 11 pence, which is the neerest summe that is to be found in all the tables; and at the head of this table you shall finde, your money brings you in by this bargain 10 in the hundred profit.

All this which hath been spoken of purchasing of Leases, you may apply to Fines for the abatement of a greater or lesser part of the Rent of anything.

Thus, if a tenant would have 5, 10, or 20 pounds abated in his yearly Rent, it may be reckoned worth so many years purchase as the tables shew for.

But now ſuppoſe a Landlord demand an 100 pound fine for the Leaſe of an houſe for 21 years, beſides the yearly Rent. I would know how much yearly Rent this 100 pound doth countervalue after the rate of 10 in the hundred.

In this caſe, you muſt take the ſumme ſet down in the table, which for this example is 8 pounds, 12 ſhillings, 11 pence, and finde how many times it is contained in an 100 pound; for ſo many pounds of yearly Rent it countervalues.

Now this you may do by reducing the ſaid 8 pound, 12 ſhillings, 11 pence into pence; ſo it is 2075 pence. Likewiſe in an 100 pound are 24000; this divided by the foreſaid 2075, yields 11 in the quotient, and there remaims $\frac{1175}{2075}$, which is ſomewhat more then an half; ſo that is above 11 pound, 10 ſhillings.

If you will know this more exactly, multiply 1175 parts of a pound by 20, ſo you have 23500, which divided by the former number 2075, yields 11 ſhillings in the quotient, and 675 remaining.

Again, if you multiply this 675 by 12, it yields 8100, which divided by 2075, yields almoſt 4 pence, wanting onely half a farthing.

So that this 100 pound fine ſhould coun-

tervalue according to this rate, 11 pound, 11 ſhillings 4 pence *fere* of yearly Rent.

Or you may have recourſe to the table of Reduction following, and thereby reduce the ſumme into tenths of pounds.

Thus the ſaid 8 pounds, 12 ſhillings, 11 pence reduced, is 8 pound, 6458; with this divide the price of your Fine, an 100 pound, adding ſome cyphers thereto, as need ſhall be. So in this example, the Fine being 100 pound, you ſhall finde, 11 pound 566, that is, 11 pounds, 11 ſhillings, 4 pence *fere*; and ſo much yearly Rent doth an 100 pound Fine countervalue at the rate of 8 pound in the hundred for 21 years.

Laſtly, you may ſee by the latter end of the tables, what rate of profit your money yields you, buying any thing out right at any number of years purchaſe. Thus, at 10 years purchaſe, your money yields you 10 *per Centum* profit, as you may ſee by the table. At 12 years and an half purchaſe for the free ſimple, your money yields you 8 *per Centum* profit, as you may ſee by the end of the Table of 8 *per Centum*. And at 20 years purchaſe your money yields you but 5 *per Centum* profit.

And if you would know this more exactly, take this Rule, divide an 100 by the number of years, the quotient will ſhew you

the rate of the profit you have for your money.

Thus 100 divided by 12 years, the price of the purchase of the fee simple, yields, 8,3333, or 8 pound, 6 shillings, 8 pence for the rate of the profit.

So 100 divided by 18 years, yields 5555, which is 5 pound, 11 shillings, 11 pence for the rate of your profit.

Or else if you divide an 100 by the rate of the profit you look to have, in the buying of your purchase, you may see how many years purchase you may fully give for it.

Thus, divide an 100 by 6, if that be the rate of the profit you desire in your purchase, and you shall finde 16 years and two thirds of a year, so many years purchase you may give, and yet make 6 in the hundred profit of your money.

By this a man having bought Land or Houses at any price, he may know which of the foresaid tables he must use in the letting Leases thereof again, that he save or get by the bargain, as he shall think fit; or at least may know whether he gets or loses by the Leases he lets.

Of *Reversions.*

THus much for buying any thing which is presently to be possessed.

There are other kinde of purchases in Reversion, when the thing yields no profit for the present, till some considerable term of years be passed.

And in these bargains you must also look first into the quality of the the thing, and the certainty thereof; and accordingly seek out the value thereof at a greater or lesser rate of Interest.

And to this purpose I have set down these tables of Reversions to the several rates of Interest aforesaid; for though they are included in the other, yet I thought it somwhat more plain, thus to extract them for your more ready use. And I have contracted them into as small a compasse as I can, yet so as they will be plain enough, considering what hath been said before, these being to be used after the same manner.

These tables shew how much one pound or 20 s. to be paid or received, any number of years hereafter, is worth at the present time in ready money, after the several rates of 5, 6, 8, 10, and 12, *per Cent.*

Tables of Reversions.

	V per C.		VI per C.		VIII per C		X per C.		XII per C.	
	sh.	d.	sh.	d.	sh.	d.	sh.	d.	sh.	d.
1	19	0	18	10	18	6	18	2	17	10
2	18	2	17	9	17	1	16	6	16	0
3	17	3	16	7	15	10	15	0	14	2
4	16	6	15	6	14	8	13	8	12	9
5	15	8	14	11	13	7	12	5	11	4
6	14	11	14	1	12	7	11	4	10	2
7	14	3	13	4	11	8	10	3	9	0
8	13	6	12	6	10	9	9	4	8	1
9	12	11	11	10	10	0	8	6	7	2
10	12	1	11	2	9	3	7	8	6	6
11	11	11	10	7	8	6	6	11	5	9
12	11	1	9	11	7	11	6	6	5	1
13	10	8	9	5	7	4	5	9	4	7
14	10	1	8	10	6	9	5	4	4	1
15	9	8	8	4	6	3	4	9	3	8
16	9	1	7	10	5	10	4	4	3	3
17	8	9	7	6	5	4	4	0	2	11
18	8	4	7	0	5	0	3	7	2	7
19	7	11	6	7	4	7	3	3	2	4
20	7	6	6	3	4	3	3	0	2	1
21	7	2	5	10	3	11	2	9	1	10
22	6	10	5	7	3	8	2	6	1	8
23	6	7	5	3	3	4	2	2	1	6
24	6	2	4	11	3	1	2	0	1	4
25	5	11	4	8	2	11	1	10	1	2
26	5	7	4	5	2	8	1	8	1	0
27	5	5	4	2	2	6	1	6	0	11
28	5	1	3	10	2	4	1	5	0	10
29	4	10	3	9	2	2	1	3	0	9
30	4	8	3	6	2	0	1	2	0	8
31	4	6	3	3	1	10	1	1	0	7

Now because these tables shew the value of a reversion but to 31 years (though that may be enough for most occasions) yet if you please to know the worth of a reversion for any longer time this breif and more general table may give you some insight therein.

The increase of 20 shillin. principal.	A Table of Reversions.						The decrease of twenty shillings.		
	5	6	8	10	12				
	Rate of the Interest.								
Pounds	Number of years.						lb.	d.	q.
2	15	18	9	7	6		10	0	0
4	30	24	18	15	12		5	0	0
8	45	36	27	22	18		2	6	0
16	60	48	36	30	24		1	3	0
32	75	60	45	37	30		0	7	2
64	90	72	54	45	36		0	3	3
128	105	84	63	52	42		0	1	3
256	120	96	72	60	48		0	1	0
512	135	108	81	67	54		0	0	2
1024	150	120	90	75	60		0	0	1

Note

Note, you cannot expect this table so exact as a particular table; and when you cannot finde your just number of yeares, you must guesse at the encrease or decrease by proportion.

This table is so plain that it needs no declaration; yet lest any should not understand it, take this direction in the use thereof.

First, finde out your rate of Interest desired, at the top of the table, then look down in that column till you finde your number of years desired (or the neerest thereto) and against this number of years in that same line upon the right hand of the table you have the decrease of one pound, or the worth of one pound or 20 s. in reversion after the said number of years.

And though it make little for our present purpose, yet because it may so fitly be expressed in this table, I have on the left hand side of the table expressed the value and increase of one pound in the like number of years.

Example.

Thus in the middle column of the table, which is cast up at the rate of 8 *li. per Cent.* you shall finde in the last line, that in the space of 90 years, the reversion of one pound is worth but a farthing, and the en-

creaſe of one pound comes to 1024 li.

Now the uſe of theſe Tables are thus.

WHen you would know the worth of any thing in reverſion, firſt you muſt conſider the nature of the thing whither it be an houſe or land, and whither you are to buy a leaſe or the Fee ſimple thereof, & ſo accordingly by the former rules, finde out what it is worth in ready money, as if it were free from all ingagements.

Secondly, according to the nature of the thing, ſo you may look to have more or leſſe allowance for your money, and ſo having conſidered what allowance is fit for the purchaſe, finde that out at the top of the table, and in that column, at, or againſt the number of years for which the thing is engaged, you ſhall finde the worth of one pound or 20 s. in reverſion for the ſaid time.

Thirdly, look how many pounds the purchaſe would be worth in ready money, ſo many times you muſt take the ſaid reverſion of one pound, and either by addition or multiplication bring it into one ſumme, and ſo you have the true value of the reverſion.

For

For Example.

A parcel of land of one hundred pounds yearly rent, being worth 20 years purchase is worth in ready money 2000*li.*

Now suppose this land is Morgaged, or Leased out for 21 years, what is the reversion thereof at the end of 21 years, worth in ready money? Here first you see the Land if it were free from ingagements were worth 2000*li.* ready money.

Secondly, because it is a reversion of land and so certain, it is fit the allowance should be but after rate of 5*li. per Cent.* according as the purchase thereof is worth. Now the first table of Reversions shew, that one pound, at the end of one and twenty years is worth but 7*s.* 2*d.* ready money at the said rate of 5*li. per Cent.*

Thirdly, this 7*s.* 2*d.* therefore must be added or multiplied 2000 times according to the full value of the purchase which you may easily do by the table of accounts following, at the latter end of the book.

As thus,	*li.*	*sh.*	*d.*
2000 *times* 7 *s. is*	700	00	0
2000 *times* 2 *d. is*	016	13	4
In all	716	13	4

And this is the worth of the said reversion.

If it be the reversion of a lease of a house

or

or land, you muſt do likewiſe, only finde the worth of the reverſion of one pound, under the title of *6 li. 8 li.* or *10 li. per Cent.* as the nature of the thing requires. For your better inſtructions here in, you may make uſe of thaſe following *Rules*, which are grounded upon the firſt tables of purchaſes, yet come much to one reckoning, and perhaps may be ſomewhat more plain and eaſie.

I.

If you are to purchaſe the Reverſion of a piece of Land.

Firſt, conſider how many years purchaſe the Land is worth, if it were preſently to be poſſeſſed, which is about 20 years purchaſe, for which account 20 pound.

Then look in the Table under the rate of *6* in the hundred, (which is the rate ſixteen for Leaſes of land) how much the years, for which it is engaged, comes to.

Now ſubſtract this out of the other, and the remaining ſumme will give you the value of the purchaſe, accounting the pounds for years, and the ſhillings and pence for parts of a year.

Thus for example, any piece of Land being worth 20 years purchaſe, being ingaged

gaged by Leaſe, or otherwiſe, for 21 years, the reverſion will be worth eight years and a quarters purchaſe.

For, ſuppoſe the rent to be one pound or 20ſ. a year,

The full value of it is	20*li.*	00*ſ.*	00*d.*
The Leaſe of 21 *years at ſix in the hundred, comes to*	11	15	03
which ſubſtracted, ſhews	08	04	09

That is, eight years, and almoſt a quarter of a years purchaſe, and ſo you may reckon it up for any other yearly rent.

II.

The like courſe you muſt take in purchaſing the Reverſion of Houſes,

Firſt, account their full value, and then ſubſtract the worth of the years for which they are ingaged, at rates according to their goodneſſe.

Thus reckoning a good new built houſe to be worth 12 years purchaſe, the reverſion thereof after 21 years will be worth about three years, and a quarter, and half a quarters purchaſe.

For the rent being 20 ſ. yearly.

	li.	*ſh.*	*d.*
The full value is	12	00	00
The leaſe of 21 *years at ſix in the hundred comes to*	08	12	11
Which ſubtracted, ſhews,	03	07	01

III.

III.

A tenant hath some term of years in a lease, & either he or his Landlord desires to have his years increased to any certain number.

To finde the true worth of such a bargain, you need onely finde out by the Tables the true value of the whole number of years desired. Then finde out likewise the true value of the lesser number of years, that the Tenant hath already. Lastly, subtract the one from the other, and the remainer shews how many years purchase the thing is worth.

Thus a Lease of Land for 60 years, wherein the Tenant hath already a Lease of 21 years, is worth about 4 years and a half purchase.

For the rent being 20 s yearly.

	li.	sh.	d.
The whole 60 years, at 6 per Cent. is worth	16	03	03
The 21 years at the same rate of 6 per Cent. is	11	15	03
which subtracted, rests	04	08	00

In like manner, a Lease of an house for 60 years, wherein a Tenant hath 21 years already, is worth one year, and a quarters purchase, and somewhat more.

For

For the rent being 20 l. yearly.

	li.	sh.	d.
The 60 years after ten in the hundred, is worth	09	19	04
And 21 years at the same rate, is worth	08	12	11
which subtracted, leaves	01	06	05

That is, about one year, and one quarter of a years purchase: so that let the house be of what yearly rent it will, the Lease will be worth one year, and a quarter of a years purchase, and about a moneth over.

The like you may do for any other number of years.

But these extraordinary long Leases are not so profitable for the Landlord, for they yield him but little more ready money then a Lease of 20 or 30 years shorter.

As now suppose a Landlord would make a Lease of Land up to 40 years, wherein his Tenant hath 20 years to come, what may it be worth? you shall finde as before,

The rent being 20 s. a year.

	li.	sh.	d.
The 40 years are worth at 6 per Centum,	15	00	8
The twenty years at the same rate are worth	11	15	3
which subtracted, Rests	03	5	5
Now the Lease for 60 yields but	4	8	0

So that for little more then one years pur-

purchaſe he may ſave 20 years benefit to himſelf or his heirs out of 60 years. And if the Leaſe ſhould be longer, as an 100 years, his damage would be worſe.

So for a Leaſe of an houſe,

	li.	ſh.	d.
The 40 years at 10 per Centum *are worth*	9	15	7
The twenty years at the ſame rate are worth	8	10	3
Which ſubſtracted, Reſt,	1	5	4
The Leaſe for 60 years yielded	1	6	5

So that by this there will be 20 years ſaved out of the 60 for very little money. So great loſſe comes by ſelling ſuch long Leaſes, or Reverſions.

And theſe Reverſions are ſomewhat conſiderable in a ſhorter time; as thus,

Suppoſe a mans Leaſe is out within 3 years, and he deſires to have a new Leaſe of 21 years, to begin when his 3 years are out, what is this Leaſe worth in ready money?

To finde out the worth of this, conſider the time he hath in his old Leaſe, which is 3 years, and this added to 21 years, makes it 24 years. Then look out the full worth of theſe 24, and ſubtract from it the worth of the 3 years, the reſt is the value of the ſaid Leaſe in ready money.

Thus, if it be a Leaſe of Land,

The rent being 20 *s.* a year.

24 *years*

	li.	sh.	d.
24 years at 6 per Centum are worth	12	11	0
And 3 years are worth	2	13	6
Which substracted, Rests	9	17	6

Which is ten years, lacking onely half a quarters purchase, whereas a Lease of 21 years presently to begin is worth 11 pound, 15 shillings, 3 pence, that is, 11 years and three quarters purchase.

One question more, and so I shall conclude the use of these Tables.

A man hath his life in a parcel of Land, or in an house, and desires to have this Lease for life changed into a Lease of 21 years.

The rent being 20 s. a year.

	li.	sh.	d.
A Lease of 21 years of Land, at 6 per Centum is worth	11	15	3
His life (if strong and lusty) may be worth as much as a Lease of 10 years which at the same rate of 6 per Cent. is worth	7	7	2
Which substracted, Rests	4	8	1

And so much is it worth to have his Lease altered, *viz.* 4 years, and almost half a years purchase.

Many other Rules and Tables concerning Annuities might be propounded, but these I think of most frequent use and necessary consequence, which thus you see may be all per-

performed by this one ſort of tables.

But now ſince none of theſe bargains can be made without reſpect had to theſe or ſuch like tables of Intereſt, or Uſury, wherein there muſt reſpect be had, not onely to ſimple Uſe, but to Uſe upon uſe; I hope I may without offence to any ſpeak a word or two in the defence of Uſury.

The Argument I ſhall uſe is onely this; that if it be not onely lawfull but neceſſary to give and take Uſe upon Uſe; then, at leaſt, it may be lawfull, though not neceſſary, to give or take moderate ſimple Uſe, according to the allowance of the times.

That it is not onely lawful but neceſſary, to take or give Uſe upon Uſe, is plainly maninfeſt in all theſe kinde of bargains, which cannot be made any other way, Now the neceſſity of theſe bargains is manifeſt every day, and the lawfulneſſe of them cannot be queſtioned, being ſo plainly allowed by the Laws of God, and men.

Indeed many are the abuſes thereof which if poſſible ſhould be reformed; and to this purpoſe, the Law and our Governors have done their parts, not only formerly but lately in ſetting ſo low a rate of Intereſt, as *6 per Centum*. And according to this new rate

I have calculated these tables, whereby every one may see what he ought to give or take, and so neither endanger nor endamage himself either way.

A New and Exact Table of Interest, shewing the true Interest due upon any Sum of Money for any time, at the Rate of 6 per Centum.

FOR the more exactnesse in this Table, in every Column the money is reckoned not only in pounds, shillings, and pence, (which is ordinary) but each peny is divided into an hundred parts; which, though it may seem somewhat strange at first, yet they are easily reckoned into farthings, which are more usual with us. For twenty five, which is a quarter of an hundred, make one farthing; fifty of these parts are an halfpeny; and seventy five are three farthings. This considered, there will be, I hope, no difficulty in the Table.

Tables

Tables of Interest at 6 per Cent.

		1 day.			2 dayes			3 dayes		
		li.	sh.	d. c.	li.	sh.	d. c.	li.	sh.	d. c.
Shill.	5			1			2			3
	10			2			4			6
	15			3			6			9
Pounds	1			4			8			12
	2			8			16			24
	3			12			24			35
	4			15			31			47
	5			19			39			59
	6			23			47			71
	7			27			55			82
	8			31			63		5	94
	9			35			71		1	6
Pounds	10			39			78		1	18
	20			79		1	58		2	37
	30		1	18		2	36		3	55
	40		1	58		3	15		4	73
	50		1	97		3	94		5	91
	60		2	36		4	73		7	10
	70		2	76		5	52		8	28
	80		3	15		6	31		9	46
	90		3	55		7	10		10	6
	100	0	3	94	0	7	89	0	11	83
	200	0	7	89	1	3	78	1	11	67
	300	0	11	83	1	11	67	2	11	50
	400	1	3	78	2	7	56	3	11	34
	500	1	7	72	3	3	45	4	11	18
	600	1	11	67	3	11	34	5	11	1
	700	2	3	61	4	7	23	6	10	85
	800	2	7	56	5	3	12	7	10	68
	900	2	11	50	5	11	01	8	10	52
	1000	3	3	45	6	6	90	9	10	53

Tables of Interest at 6 per Cent.

	4 dayes				5 dayes				6 dayes			
	li.	sh.	d.	c.	li.	sh.	d.	c.	li.	sh.	d.	c.
Shil. 5				4				5				6
10				8				10				12
15				12				15				18
Pounds 1				15				19				23
2				31				39				47
3				47				59				71
4				63				78				94
5				78				98			1	18
6				94			1	18			1	42
7			1	10			1	38			1	65
8			1	26			1	58			1	89
9			1	42			1	77			2	13
10			1	57			1	97			3	36
20			3	15			3	94			4	73
30			4	73			5	91			7	17
40			6	31			7	89			9	46
50			7	89			9	86			11	83
60			9	46			11	83		1	2	20
70			11	4		1	1	80		1	4	57
80		1	0	62		1	3	78		1	6	93
90		1	2	20		1	5	75		1	9	30
100		1	3	78		1	7	72		1	11	67
200		2	7	56		3	3	45		3	11	34
300		3	11	34		4	11	18		5	10	1
400		5	3	12		6	6	90		7	10	68
500		6	6	90		8	2	63		9	10	35
600		7	10	68		9	10	35		11	10	2
700		9	2	46		11	6	8		13	9	69
800		10	6	24		13	1	80		15	9	36
900		11	10	2		14	9	53		17	9	4
1000		13	1	80		16	5	26		19	8	71

Tables of Interest at 6 per Cent.

	7 dayes				8 dayes				9 dayes			
	li.	sh.	d.	c.	li.	sh.	d.	c.	li.	sh.	d.	c.
Shill. 5				7				8				9
10				13				15				17
15				20				23				26
1				27				31				35
2				55				63				71
3				82				94			1	06
Pounds 4			1	10			1	26			1	42
5			1	38			1	57			1	77
6			1	65			1	89			2	13
7			1	93			2	20			2	48
8			2	21			2	52			2	84
9			2	48			2	84			3	19
10			2	76			3	15			3	55
20			5	52			6	31			7	10
30			8	28			9	46			10	65
40			11	4		1	0	62		1	2	20
Pounds 50		1	1	80		1	3	78		1	5	75
60		1	4	57		1	6	93		1	9	30
70		1	7	33		1	10	09		2	0	85
80		1	10	09		2	1	24		2	4	40
90		2	00	85		2	4	40		2	7	95
100		2	3	61		2	7	56		2	11	50
200		4	7	22		5	3	12		5	11	01
300		6	10	84		7	10	68		8	10	52
400		9	2	46		10	6	24		11	10	02
500		11	6	8		13	1	80		14	9	53
600		13	9	69		15	9	36		17	9	04
700		16	1	31		18	4	93	1	0	8	54
800		18	4	93	1	1	0	49	1	3	8	05
900	1	0	8	54	1	3	8	05	1	6	7	56
1000	1	3	0	16	1	6	3	61	1	9	7	06

Tables of Interest at 6 per Cent.

	10 day.				20 dayes				30 dayes			
	li.	sh.	d.	c.	li.	sh.	d.	c.	li.	sh.	d.	c.
Shill.	5			10				19				29
	10			20				39				59
	15			30				59				88
Pounds	1			39				78			1	18
	2			78			1	57			2	36
	3		1	18			2	36			3	55
	4		1	57			3	15			4	73
	5		1	97			3	94			5	91
	6		2	36			4	73			7	10
	7		2	76			5	52			8	28
	8		3	15			6	31			9	46
	9		3	55			7	10			10	65
	10		3	94			7	89			11	83
	20		7	89		1	3	78		1	11	67
	30		11	83		1	11	67		2	11	50
	40	1	3	78		2	7	36		3	11	34
	50	1	7	72		3	3	45		4	11	17
Pounds	60	1	11	67		3	11	34		5	11	1
	70	2	7	61		4	7	23		6	10	84
	80	2	3	56		5	3	12		7	10	68
	90	2	11	50		5	11	1		8	10	52
	100	3	8	45		6	6	90		9	10	35
	200	6	6	90		13	1	80		19	8	71
	300	9	19	35		19	8	71		29	7	06
	400	13	1	80		26	3	61		39	5	42
	500	16	5	26		32	10	52		49	3	78
	600	19	8	71		39	5	42		59	2	13
	700	23	0	16		46	0	32		69	0	49
	800	26	3	61		52	7	23		78	10	84
	900	29	7	06		59	2	13		88	9	20
	1000	33	10	52		65	9	44		98	7	56

Tables of Interest at 6 per Cent.

	1 Moneth			2 Moneths			3 Moneths		
	li.	sh.	d. c.	li.	sh.	d. c.	li.	sh.	d. c.
Shill. 5			30			60			90
10			60		1	20		1	80
15			90		1	80		2	70
Pounds 1		1	20		2	40		3	60
2		2	40		4	80		7	20
3		3	60		7	20		10	80
4		4	80		9	60	1	2	40
5		6	00	1	0	00	1	6	00
6		7	20	1	2	40	1	9	60
7		8	40	1	4	80	2	1	20
8		9	60	1	7	20	2	4	80
9		10	80	1	9	60	2	8	40
Pounds 10		1	0 0		2	0 0		3	0 0
20		2	0 0		4	0 0		6	0 0
30		3	0 0		6	0 0		9	0 0
40		4	0 0		8	0 0	1	12	0 0
50		5	0 0	1	0	0 0	1	15	0 0
60		6	0 0	1	2	0 0	1	18	0 0
70		7	0 0	1	4	0 0	1	1	0 0
80		8	0 0	1	6	0 0	1	4	0 0
90		9	0 0	1	8	0 0	1	7	0 0
100		10	0 0	1	0	0 0	1	10	0 0
200	1	00	0 0	2	0	0 0	3	00	0 0
300	1	10	0 0	3	0	0 0	4	10	0 0
400	2	00	0 0	4	0	0 0	6	00	0 0
500	2	10	0 0	5	0	0 0	7	10	0 0
600	3	00	0 0	6	0	0 0	9	00	0 0
700	3	10	0 0	7	0	0 0	10	10	0 0
800	4	00	0 0	8	0	0 0	12	00	0 0
900	4	10	0 0	9	0	0 0	13	10	0 0
1000	5	00	0 0	10	0	0 0	15	00	0 0

Tables of Interest at 6 per Cent.

	4 Moneths			5 Moneths			6 Moneths		
	li.	sh.	d. c.	li.	sh.	d. c.	li.	sh.	d. c.
Shill.			1 20			1 50			1 80
		10	2 40		10	3 00		10	3 60
		15	3 60		15	4 50		15	5 40
	1		4 80	1		6 00			7 20
Pounds.	2		9 60	2		12 00	1	2	14 40
	3		14 40	3		18 00	1	9	21 60
	4		19 20	4		24 00	2	4	28 80
	5		24 00	5		30 00	3	0	36 00
	6		28 80	6		36 00	3	7	43 20
	7		33 60	7		42 00	4	2	50 40
	8		38 40	8		48 00	4	9	57 60
	9		43 20	9		54 00	5	4	64 80
	10		48 00	10		60 00	6	0	72 00
	20		8 0 0	20		10 0 0	12	0	0 0
	30		12 0 0	30		15 0 0	18	0	0 0
	40	1	16 0 0	1	00	0 0	24	0	0 0
	50	1	00 0 0	1	05	0 0	1	10	0 0
	60	1	4 0 0	1	10	0 0	1	16	0 0
	70	1	8 0 0	1	15	0 0	2	2	0 0
	80	1	12 0 0	2	00	0 0	2	8	0 0
	90	1	16 0 0	2	05	0 0	2	14	0 0
	100	2	0 0 0	2	10	0 0	3	0	0 0
	200	4	0 0 0	5	00	0 0	6	0	0 0
	300	6	0 0 0	7	10	0 0	9	0	0 0
	400	8	0 0 0	10	00	0 0	12	0	0 0
	500	10	0 0 0	12	10	0 0	15	0	0 0
	600	12	0 0 0	15	00	0 0	18	0	0 0
	700	14	0 0 0	17	10	0 0	21	0	0 0
	800	16	0 0 0	20	00	0 0	24	0	0 0
	900	18	0 0 0	22	10	0 0	27	0	0 0
	1000	20	0 0 0	25	00	0 0	30	0	0 0

Tables of Interest at 6 per Cent.

	7 Moneths			8 Moneths			9 Moneths		
	li.	sh.	d. c.	li.	sh.	d. c.	li.	sh.	d. c.
Mths 5			2 10			2 40			2 70
10			4 20			4 80			5 40
15			6 30			7 20			8 10
Pounds 1			8 40			9 60		1	0 80
2	1	4	80	1	7	20	1	9	60
3	2	1	20	2	4	80	2	8	40
4	2	9	60	3	2	40	3	7	20
5	3	6	00	4	0	00	4	6	00
6	4	2	40	4	9	60	5	4	80
7	4	10	80	5	7	20	6	3	60
8	5	7	20	6	4	80	7	2	40
9	6	3	60	7	2	40	8	1	20
10	07	9	0	08	0	0	09	0	0
20	14	0	0	16	0	0	18	0	0
30	1 01	9	0	1 04	0	0	1 07	0	0
40	1 08	9	0	1 12	0	0	1 16	0	0
50	1 15	0	0	1 00	0	0	1 25	0	0
60	2 02	0	0	1 08	0	0	1 34	0	0
70	2 09	0	0	2 16	0	0	3 03	0	0
80	2 16	0	0	3 04	0	0	3 12	0	0
90	3 03	0	0	3 12	0	0	4 01	0	0
100	3 10	0	0	4 00	0	0	4 10	0	0
200	7 00	0	0	8 00	0	0	9 00	0	0
300	10 10	0	0	12 00	0	0	13 10	0	0
400	14 00	0	0	16 00	0	0	18 00	0	0
500	17 10	0	0	20 00	0	0	22 10	0	0
600	21 00	0	0	24 00	0	0	27 00	0	0
700	24 10	0	0	28 00	0	0	31 10	0	0
800	28 00	0	0	32 00	0	0	36 00	0	0
900	31 10	0	0	36 00	0	0	40 10	0	0
1000	35 00	0	0	40 00	0	0	45 00	0	0

Tables of Interest at 6 per Cent.

	10 Monet.			11 Moneth			12 Moneth		
	li.	sh.	d. c.	li.	sh.	d. c.	li.	sh.	d. c.
Shill. 5			3 0			3 30			3 60
10			6 0			6 60			7 20
15			9 0			9 90			10 80
Pounds. 1		1	0 0		1	1 20		1	2 40
2		2	0 0		2	2 40		2	4 80
3		3	0 0		3	3 60		3	7 20
4		4	0 0		4	4 80		4	9 60
5		5	0 0		5	6 00		6	0 00
6		6	0 0		6	7 20		7	2 40
7		7	0 0		7	8 40		8	4 80
8		8	0 0		8	9 60		9	7 20
9		9	0 0		9	10 80		10	9 60
Pounds 10		10	0 0		11	0 0		12	0 0
20	1	00	0 0	1	02	0 0	1	04	0 0
30	1	10	0 0	1	13	0 0	1	16	0 0
40	2	00	0 0	2	04	0 0	2	06	0 0
50	2	10	0 0	2	15	0 0	3	00	0 0
60	3	00	0 0	3	06	0 0	3	12	0 0
70	3	10	0 0	3	17	0 0	4	04	0 0
80	4	00	0 0	4	08	0 0	4	16	0 0
90	4	10	0 0	4	19	0 0	5	08	0 0
100	5	0	0 0	5	10	0 0	6	0	0 0
200	10	0	0 0	11	00	0 0	12	0	0 0
300	15	0	0 0	16	10	0 0	18	0	0 0
400	20	0	0 0	22	00	0 0	24	0	0 0
500	25	0	0 0	27	10	0 0	30	0	0 0
600	30	0	0 0	33	00	0 0	36	0	0 0
700	35	0	0 0	38	10	0 0	42	0	0 0
800	40	0	0 0	44	00	0 0	48	0	0 0
900	45	0	0 0	49	10	0 0	54	0	0 0
1000	50	0	0 0	55	00	0 0	60	0	0 0

The use of these Tables.

NOw to finde the Interest of any sum of money for any time, by this table: first, look the summe of money on the side of the table; then finde the time required at the head of the table; and in the square meeting of these two, you shall finde the Interest thereof. Onely note, if you cannot finde your summe of money, or the time all at once; you must take it at two or three times and so adde them together.

Thus the Interest of 146 pounds for six moneths will be found thus.

	li.	sh.	d.	c.
100 pounds for 6 moneths is	3	0	0	0
40 pounds for 9 moneths is	1	4	0	0
6 pounds for 6 moneths is	0	3	7	20
In all	4	7	7	20

Which is 4 pounds, 7 shillings, 7 pence, and 20 hundred parts of a peny, that is, almost a farthing, as I noted before.

And thus you may do for any other sum of money, and for the more exactnesse, I have set down the Interest-money, not onely in moneths, but in single dayes to a moneth. Now a moneth in these tables is supposed to be just the twelfe part of a year, but yet it is ordinarily reckoned by the usual moneths of the year, *January*, *February*, *March*, *&c.*

But

But this way of reckoning by moneths is not altogether so exact as it might be wished; for some moneths have but 30 dayes, and others 31, and *February* hath commonly but 28. And therefore it may be worth the while (especially in great sums) to look more curiously into the time, and count it by dayes: for otherwise there may be wrong done either to the lender or borrower unawares.

For instance, suppose a bond made the 10th of *February* for six moneths, or half a year, the ordinary time. If you reckon by moneths, it will be due the 10th of *August*; but since there are 365 dayes in a year, the half thereof is 182 dayes and an half, but you cannot reckon lesse then 183 dayes, and if you account these 183 dayes from the 10th. of *February*, they will reach to the 12th. of *August*. So that by reckoning the time by the moneths, the borrower will pay the money two dayes too soon. Now if the sum of money be but 1000 pound, the Interest for those two dayes will be 6 shillings, 7 pence (very neer) and so much wrong the borrower receives, and the Statute (perhaps) is broken hereby.

To remedy this; I have observed, that Scriveners usually make such Bonds, to be paid alwayes two dayes after the day

whereon the Bond is dated.

But herein alſo they may do as much or more wrong on the other ſide, though with leſſe danger of breaking the Statute. For, ſuppoſe a Bond be made upon the 10th. of *Auguſt*, they (according to this rule) make it to be paid the 12 of *February*; whereas accounting 183 dayes (as they ought to do) for the half year, the Bond will be (*juſtly*) due upon the 9th. of *February*: and ſo by this means the Lender loſeth three dayes Intereſt.

Again, if a Bond be made the 10th. of *February* to be paid the 12 of *Auguſt*; although in this (by chance) there is no wrong to either party: yet if a new Bond be made this 12 of *Auguſt*, to be paid the 14 of *February*, the Lender you ſee in the whole year loſeth four dayes, which is very conſiderable in great ſums of money, or when Bonds are often renued.

To avoid theſe inconveniences, I have made this following table; by which you ſhall know both the exact time of any part of a year in dayes; and alſo the Intereſt which is due for any time or number of dayes. Onely herein I muſt intreat you to walk a ſtep further into the Art of *Arithmetick*; and inſtead of *Addition* to uſe *Multiplication*.

Tables

Tables of Interest at 6 per Centum.

D.	January.	D.	Februa.	D.	March
1	1	0001.643	32	0052.606	60	0098.630
2	2	0003.287	33	0054.246	61	0100.273
3	3	004.931	34	055.890	62	101.917
4	4	006.575	35	057.534	63	103.561
5	5	008.219	36	059.178	64	105 205
6	6	009.863	37	060.821	65	106.849
7	7	011.506	38	062.465	66	108.493
8	8	013.150	39	064.109	67	110.136
9	9	014.794	40	065.753	68	111.780
10	10	016.438	41	067.397	69	113.424
11	11	018.082	42	069.041	70	115.068
12	12	019.726	43	070.684	71	116.712
13	13	021.369	44	072.328	72	118.356
14	14	023.013	45	073.972	73	120.000
15	15	024.657	46	075.616	74	121.643
16	16	026.301	47	077.260	75	123.287
17	17	0027.945	48	0078.904	76	124.931
18	18	029.589	49	080.547	77	126.575
19	19	031.232	50	082.191	78	128.219
20	20	032.876	51	083.835	79	129.863
21	21	034.520	52	085.479	80	131.506
22	22	036.164	53	087.123	81	133.150
23	23	037.808	54	088.767	82	134.794
24	24	039.452	55	090.410	83	136.438
25	25	041.095	56	092.054	84	138.082
26	26	042.739	57	093.698	85	139.726
27	27	044.383	58	095.342	86	141.369
28	28	046.027	59	096.986	87	143.013
29	29	047.671			88	144.657
30	30	0049.315			89	0146.301
31	31	0050 958			90	0147.945

Tables of Interest at 6 per Centum.

D.	April	D.	May	D.	June
1	91 0149.589	121	0198.904	152	0249.863
2	92 0151.232	122	0200.547	153	0251.506
3	93 0152.876	123	202.191	154	253.150
4	94 154.520	124	203.835	155	254.794
5	95 156.164	125	205.479	156	256.438
6	96 157.808	126	207.123	157	258.082
7	97 159.452	127	208.767	158	259.726
8	98 161.095	128	210.410	159	261.369
9	99 162.739	129	212.054	160	263.013
10	100 164.383	130	213.698	161	264.657
11	101 166.027	131	215.342	162	266.301
12	102 167.671	132	216.986	163	267.945
13	103 169.315	133	218.630	164	269.589
14	104 170.958	134	220.273	165	271.232
15	105 172.602	135	221.917	166	272.876
16	106 174.246	136	223.561	167	274.520
17	107 175.890	137	225.205	168	276.164
18	108 177.534	138	226.849	169	277.808
19	109 179.178	139	228.493	170	279.452
20	110 180 821	140	230.136	171	281.095
21	111 182.465	141	231.780	172	282.739
22	112 184.109	142	233.424	173	284.383
23	113 185.753	143	235.068	174	286.027
24	114 187.397	144	236.712	175	287.671
25	115 189.041	145	238.356	176	289.315
26	116 190.684	146	240.000	177	290.958
27	117 192.328	147	241.643	178	292.602
28	118 193.972	148	243.287	179	0294.246
29	119 195.616	149	244.931	180	0295.890
30	120 197.260	150	0246.575		0297.534
31		151	0248.219		

Tables of Interest at 6 per Centum.

D.	July	D.	August	D.	Septem
1	182	0299.178	213	0350.136	244	0401.095
2	183	0300.821	214	0351.788	245	0402.739
3	184	302.465	215	353.424	246	404.383
4	185	304.109	216	355.068	247	406.027
5	186	305.753	217	356.712	248	407.671
6	187	307.397	218	358.356	249	409.315
7	188	309.041	219	360.000	250	410.958
8	189	310.684	220	361.643	251	412.602
9	190	312.328	221	363.287	252	414.246
10	191	313.972	222	364.931	253	415.890
11	192	315.616	223	366.575	254	417.534
12	193	317.260	224	368.219	255	419.178
13	194	318 904	225	369.863	256	420.821
14	195	320.547	226	371.506	257	422.465
15	196	322.191	227	373.150	258	424.109
16	197	323.835	228	374.794	259	425.753
17	198	325.479	229	376.438	260	427.397
18	199	327.123	230	378.082	261	429.041
19	200	328.767	231	379.726	262	430.684
20	201	330.410	232	381.369	263	432.328
21	202	332.054	233	383.013	264	433.972
22	203	333.698	234	384.657	265	435.616
23	204	335.342	235	386.301	266	437.260
24	205	339.986	236	387 945	267	438.904
25	206	338.630	237	389.589	268	440.547
26	207	340.273	238	391.232	269	442.191
27	208	341.917	239	392.876	270	443.835
28	209	343.561	240	394.520	271	445.479
29	210	345.205	241	396.164	272	447.123
30	211	0346.849	242	0397.808	273	0448.767
31	212	0348.493	243	0399.452		

Tables of Interest at 6 per Centum.

D.	October	D.	Novem.	D.	Decem.
1	274 0450.410	305	0501.369	335	0550.684
2	275 0452.054	306	0503.013	336	0552.328
3	276 0453.698	307	0504.657	337	0553.972
4	277 0455.342	308	0506.301	338	0555.616
5	278 0456.986	309	0507.945	339	0557.260
6	279 0458.630	310	0509.589	340	0558.904
7	280 0460.273	311	0511.230	341	0560.547
8	281 0461.917	312	0512.876	342	0562.191
9	282 0463.561	313	0514.520	343	0563.835
10	283 0465.205	314	0516.164	344	0565.479
11	284 0466.849	315	0517.808	345	0567.123
12	285 0468.493	316	0519.452	346	0568.767
13	286 0470.136	317	0521.095	347	0570.410
14	287 0471.780	318	0522.739	348	0572.054
15	288 0473.424	319	0524.383	349	0573.698
16	289 0475.068	320	0526.027	350	0575.342
17	290 0476.712	321	0527.671	351	0576.986
18	291 0478.356	322	0529.315	352	0578.630
19	292 0480.000	323	0530.958	353	0580.273
20	293 0481.643	324	0532.602	354	0581.917
21	294 0483.287	325	0534.246	355	0583.561
22	295 0484.931	326	0535.890	356	0585.205
23	296 0486.575	327	0537.534	357	0586.849
24	297 0488.219	328	0539.178	358	0588.493
25	298 0489.863	329	0540.821	359	0590.136
26	299 0491.506	330	0542.465	360	0591.780
27	300 0493.150	331	0544.109	361	0593.424
28	301 0494.794	332	0545.753	362	0595.068
29	302 0496.438	333	0547.397	363	0596.712
30	303 0498.082	334	0549.041	364	0598.356
31	304 0499.726			365	0600.000

THese Tables are so plaine, that I suppose they need no demonstration, being made in the form of a plain Almanack, Onely I shall shew the use thereof in two or three examples.

I *If a bond be dated the* 10th. *of February, when is the half year, or* 183 *days out?*

First, in these tables you shall find against the 10th. of February, the number 41, which shews, it is the one and fortieth day from the beginning of the year; and then if you add 183 dayes being the half year to this 41, it makes 224 dayes. Then look forward till you finde this number, which you shall find in this table against the 12th. of August; and this is the day when the half year is finished.

II *How many dayes is it from the* 12th. *of August, to the last of December?*

In this you must substract the later time out of the former time. Thus, against the last of December, you shall finde 365 dayes, and against the 10th of August 222 dayes, which substracted out of the other, there remaines

maines 143, and so many are the dayes required.

I put down this question because many times it will be needfull to know the dayes which fall out in severall years, and if the number out of which you should substract, will be lesser then the number which you should substract out of it; in this case you may first finde the days to that years end, and then add the lesser number which fall out in the year following thereunto.

III. *Thus, if you would know how many dayes it is from the tenth of Auguste the ninth of February.*

First from the tenth of August to the years end, as before was found to be 143 dayes; and to this if you adde the dayes found against the ninth of February which are 40, it will make 183 dayes, or the half a year, and not the 1 of February, as I noted before

The like you may do for any other number of dayes, or any other time of a year, only take notice that the year consisting of 365 dayes, the parts thereof exactly are thus:

One moneth, or a twelfth part of a year, is 30 dayes 10 hours.

Three moneths, or one quarter, 91 dayes, 6 hours.

Six

Six moneths, or an half, 182 dayes, 12 hours.
Nine moneths, or three quarters, 273 dayes, 18 hours.

But to keep without danger of the Statute, and to allow some favour to the borrower, if you reckon the parts of the interest money by the time, then reckon thus,
For one moneth, or the twelfth part of a year, 31 dayes.
For three moneths, or one quarter, 92 dayes.
For six moneths, or an halfe; 183 dayes.
For nine moneths, or three quarters, 274 dayes.

IV. *To know what is the true use of any summe of money for any number of dayes, after the rate of six per Centum.*

Having found out the true number of dayes as is before shewed; finde out this number of dayes in the Table, and there you shall finde in a decimall Fraction the true Interest of one pound for the said time: So that the proportion will be thus.

As 1 di. *or* 1.0000,000
To the number in the Tables,
So any number of pounds inquired,
To the like number required.

Take this number therefore, and multiply it by your principall summe, and then

CHA-

ting off the seven last figures toward your right hand, the remainer will shew you the pounds which it comes to, and the figures cut off, they are a fraction of a pound. But now in the valuation whereof, you need make use but of the first four figures, reckoning the first figure doubled, and it will shew the shillings; if the second figure be more then five, take five out of it and reckon one shilling more for it; lastly, the remainer of that above five, and the next following figure will shew the farthings very neer, if you abate but one in 25. Or you may find the true value of these first four figures in the decimall table, pag. 26.

For Example.

What is the Interest of 555 pounds, for about half a year, or 182 dayes?

The number against 182 dayes is 0299,178

This multiplyed by 555

1495890
1495890
1495890

Yields 166043,790

Which, according to the former rules and Tables, comes to 16 pound 12 shillings 1 peny, and a little more, *viz.* scarce two tenth parts of a farthing.

And

And thus you may do for any other number of even pounds: and if you think this too much labour, then if your principall money be not very much, you need take out but the first 4 figures of the Tables to be multiplied (which are therefore ſeparated from the reſt by this point [.]) and then you muſt cut off but 4 figures from the product, and thoſe remaining will exactly agree with the decimall Table.

Thus, the 4 firſt figures of the former number being 0199

Multiplied by 555

	1495
1	495
14	95

Yields 16|5945

Which is 16 *li.* 12 *ſhil.* very neer.

But if you will be more exact, and know alſo the intereſt of ſhillings and pence, if there be any ſhillings and pence belonging to your principall ſumme; you muſt firſt reduce them into one decimall fraction, by the Table, and then take the 4 firſt figures of this number in the Table, and multiply them together. And obſerve how many figures you multiply by, and cut off ſo many figures from the end of the pro-

duct

duall, the reſt of the figures if they be three, put one cipher before them; if they be two, put two ciphers before them, to make them agree to the 4 places in the Decimall Table and ſeeke that ſum in the decimall Table, which will ſhew the true value thereof. Note, that it cannot exceed 0600, which is 1 ſhilling 2 pence & 40 hundred parts.

Thus for example, if your principall ſumme were 555 pound, 11 ſhillings, the Intereſt of the 11 ſhillings muſt thus be found;

The Intereſt for 182 dayes is	,0299
11 ſhil. reduced into decimals is	55
	1495
	1495
	,016445

By cutting off the two laſt figures, and adding one cipher to the beginning to make the three figures to four places; the ſum is 0164, which in the decimall Table ſhewes 4 pence very neer.

Or yet more exactly, if you adde this to your former product of the 555 *li*

	li.
which was	16,6043790
and this laſt	,016445
In all	16,62081|240

So

So the whole Interest appears to be 16 pound, 11 shillings, 5 pence.

But, me thinks, I hear some taxing of me for being so scrupulous in accounting the Interest of money by dayes, and not rather much some way, how a just abatement should be made for those payments which are made before the year is fully out. For the Act allowes to take 6 pound in the hundred for the whole yeare; now if a man takes 3 pound *per Centum* for the half year; the said 3 pound in the other half year will yield, at the same rate, 1 shilling, 9 pence, 2 farthings; and thus, some think, a man takes more then the Act allowes, and comes within the danger thereof.

But the Law herein looks upon the year, as the fittest measure of time to proportion the Interest by; and the intent of the law is to restrain the grosser abuses of Extortioners, and not to take notice of such niceties as this; which would have made it either very large and tedious, by appointing exact Tables for it, moneth by moneth, nay, day by day; or else intricate, and full of snares for men to fall into. The plain meaning of the law is this; that, as a year should measure the time, so the said 6 pound should proportion the Interest; the parts of the one answering to the parts of the

the other; neither allowing any Interest upon the Interest, for the time under or over a year, nor tying any man to let or take up money for the whole year.

The usuall custome therefore in this case is a good Comment upon this Law; by which most Bonds of this nature are made to be paid at six moneths end, and yet the full half of the whole years Interest allowed; which would never have been so long and frequently done, if it had been thought any breach of the Statute.

And therefore, though there might be an allowance made by way of rebatement, and the case may seem somewhat like, yet it is not the same; neither doth the strictest rebatement used among Merchants, take any notice thereof, but is grounded upon another cause, as you may see more in the next particulars.

OF

OF
Rebatement.

MErchants, though they ſeldome let out mony to uſe, yet they often take up much; and that not only the common way by Bond, which I ſpake of before, but by way of rebatement; which is thus.

A Merchant being to ſell any commodity, he either ſels it for ready money, or to be paid at a certain time, *viz.* 3, 6, or 12 Moneths after. But the bargain being thus made, it often falls out, that with good convenience, to the buyer or ſeller, or both, to have this money paid before it be due; and then there is and ought to be an allowance or rebatement between them out of the principall, according to the rate of Intereſt-money allowed at that time.

Now this rebatement hath been uſually reckoned by the Table of ordinary Intereſt, abating ſo much out of the principall debt, as the uſe of the ſaid principall would come to in the time agreed upon. But in reckoning thus, there will alwayes be ſome damage to the Creditor who doth abate, which though in little ſummes, will not be much,

much, yet in greater summes of money, such as this rebatement is most used in, it will be very considerable, and is of late observed by the most skilfull Merchants.

For Example.

The Interest of an hundred pound for six moneths comes to 3 pound. But Now suppose *A* oweth to *B* an hundred pound, to be paid six moneths hence: and *A* and *B* are agreed to give and take rebate; here I say *B* ought not to abate full 3 *li.* out of his 100 *li.* as the Table of Interest will shew, but somewhat lesse. Indeed, if the debt had been 103 pound, then there should have been 3 pound abated out of the debt; but there being but an hundred pound due in all, and that not till the end of six moneths; there must be so much a lesse proportion for the abatement, as there is a difference between 103 and 100; which may be thus found by the rule of proportion.

li. *li.* *li.* *li*

As 103, *to* 100; *so* 100, *to* 97.0874

Which is 97 pound, 1 shilling, 9 pence. So that there is only 2 pound, 18 shillings, 3 pence to be abated, and not 3 pound, as by the other reckoning.

Therefore if you would finde out the worth of any debt, due hereafter, in ready money;

money; First, finde out by the Tables of Interest, what an hundred pound will yeild in the time desired: then work by the rule of proportion thus,

As an 100 pound, with the Interest thereof for that time,
Is to an 100 pounds,
So the debt to be paid at that time,
To its worth in ready money.

Thus, to finde the worth of an hundred pound, due 12 moneths hence.

As 106, *to* 100; *so* 100, *to* 94.3396. which is 94 pound, 6 shillings, 9 pence, 2 farthings. So that here is not six pounds to be abated out of the 100 pound, (as some have thought) but 5 pound, 13 shillings, 2 pence, 2 farthings. And thus the creditour may save 6 shillings, 9 pence, 2 farthings which by the other way of reckoning he will rebate in his own wrong. And if the sum be greater, or the time of payment longer, his damage will be more.

Again, you see that this money to be rebated doth not increase equally, in an equal time; there was 2 pound, 18 shillings, 3 pence, to be abated out of the 100 pound, due at 6 Moneths, but there is 5 pound, 13 shillings, 2 pence, 2 farthings to be abated for the 100 pounds due at 12 Moneths; which is not the double of the other, for so

it should have been, 5 pound, 16 shillings 6 pence. So that these Tables must be cast up for every Moneth at the least, which is the most usuall way of reckoning the times of payments among Merchants, and thus I have drawn them out to 24 Moneths, which is as long (I think) as any Merchant desires to trust, or will be content to rebate for.

Rebate at 6 per Cent.

	1 Moneths			2 Moneths			3 Moneths		
	li.	sh.	d. c.	li.	sh.	d. c.	li.	sh.	d. c.
Shil.	5		30		1	59			89
	10		60		1	19		1	77
	15		90		1	78		2	66
Pounds	1		1 19		2	37		3	54
	2		2 19		4	75		7	09
	3		3 58		7	12		10	64
	4		4 78		9	50	1	2	18
	5		5 97		11	87	1	5	73
	6		7 17	1	2	25	1	9	28
	7		8 36	1	4	62	2	1	83
	8		9 56	1	7	00	2	4	37
	9		10 75	1	9	37	2	7	92
Pounds	10		11 94	1	11	76	2	11	47
	20	1	11 88	3	11	52	5	10	93
	30	2	11 82	5	11	29	8	10	40
	40	3	11 76	7	11	05	11	9	87
	50	4	11 70	9	10	81	14	9	34
	60	5	11 64	11	10	58	17	8	80
	70	6	11 59	13	10	34	1	0	8 27
	80	7	11 53	15	10	10	1	3	7 74
	90	8	11 47	17	9	86	1	6	7 21
	100	9	11 40	19	9	62	1	9	6 68
	200	19	10 80	1	19	7 24	2	19	1 36
	300	9	10 20	2	19	4 87	4	8	8 04
	400	1	19 9 61	3	19	2 49	5	18	2 72
	500	2	9 9 01	4	19	0 12	7	7	9 40
	600	2	19 8 41	5	18	9 74	8	17	4 08
	700	3	9 7 82	6	18	7 37	10	6	10 76
	800	3	19 7 22	7	18	4 99	11	16	5 44
	900	4	9 6 63	8	18	2 61	13	6	0 12
	1000	4	19 6 03	9	18	0 23	14	15	6 79

Rebate at 6 per Cent.

	4 Moneths			5 Moneths			6 Moneths.		
	li.	sh.	d. c.	li.	sh.	d. c.	li.	sh.	d. c.
Shill.						1 46			1 75
		1	18			2 93			3 49
	10	2	35			4 39			5 23
	15	3	53						
						5 85			6 99
Pounds	1	4	70			11 71	1	1	98
	2	9	41				1	8	97
	3	2	12	1	5	56	2	2	96
	4	1	6	82	1	11	42	2	10	95
	5	1	11	53	2	5	27	3	5	94
	6	2	4	24	2	11	12	4	0	93
	7	2	8	94	3	4	97	4	7	92
	8	3	1	65	3	10	83	5	2	91
	9	3	6	35	4	4	68			
	10	3	11	06	4	19	54	5	9	90
	20	7	10	12	9	9	07	11	7	80
	30	11	9	18	14	7	61	17	5	70
	40	15	8	23	19	6	15	1	3	61
	50	19	7	29	1	4	68	1	9	51
	60	1	3	6	35	1	9	3	22	1	14	42
Pounds	70	1	7	5	41	1	14	11	76	2	0	32
	80	1	11	4	47	1	19	00	29	2	6	22
	90	1	15	3	53	2	3	10	83	2	12	13
	100	1	19	2	59	2	8	9	36	2	18	03
	200	3	18	5	18	4	17	6	73	5	16	06
	300	5	17	7	76	7	6	4	10	8	14	09
	400	7	16	10	35	9	15	1	46	11	13	12
	500	9	16	0	94	12	3	10	83	14	13	14
	600	11	15	3	53	14	12	8	19	17	9	17
	700	13	14	6	12	17	1	5	56	20	7	20
	800	15	13	8	70	19	10	2	93	23	6	23
	900	17	12	11	29	21	19	0	29	26	4	26
	1000	19	12	1	88	24	7	9	66	29	2	29

Rebate at 6 per Cent.

	7 Moneths			8 Moneths			9 Moneths		
	li.	sh.	d. c.	li.	sh.	d. c.	li.	sh.	d. c.
Shill.			2 03			2 31			2 58
			4 06			4 61			5 17
			6 09			6 91			7 75
Pounds	1		8 11			9 23			10 33
	2	1	4 23		1	6 46		1	8 67
	3	2	0 35		2	3 69		2	7 00
	4	2	8 46		3	0 92		3	5 34
	5	3	4 58		3	10 15		4	3 67
	6	4	0 69		4	7 38		5	2 01
	7	4	8 83		5	4 62		6	0 34
	8	5	4 93		6	1 85		6	10 68
	9	6	1 04		6	11 08		7	9 01
Pounds	10	6	9 16		7	8 31		8	7 35
	20	13	6 32		15	4 61		17	2 70
	30	1 0	3 48	1	3	0 92	1	5	10 05
	40	1 7	0 64	1	10	9 23	1	14	5 40
	50	1 13	9 80	1	18	5 54	2	3	0 75
	60	2 0	6 96	2	6	1 85	2	11	8 10
	70	2 7	4 12	2	13	10 15	3	0	3 45
	80	2 14	1 28	3	1	6 46	3	8	10 80
	90	3 0	10 44	3	9	2 77	3	17	6 15
	100	3 7	7 59	3	16	11 18	4	6	1 49
	200	6 15	3 19	7	13	10 15	8	12	2 98
	300	10 2	10 78	11	10	9 23	12	18	4 48
	400	13 10	6 38	15	7	8 31	17	4	5 97
	500	16 18	1 97	19	4	7 38	21	10	7 46
	600	20 5	9 57	23	1	6 46	25	16	8 95
	700	23 12	5 16	26	18	5 54	30	2	10 45
	800	27 1	0 76	30	15	4 61	34	8	11 94
	900	30 8	8 35	34	12	3 69	38	15	1 44
	1000	33 16	3 95	38	9	2 77	43	1	2 93

Rebate at 6 per Cent.

	10 Moneth			11 Moneths			12 Moneths		
	li.	ſh.	d. c.	li.	ſh.	d. c.	li.	ſh.	d. c.
Shill. 5			2 85			3 13			3 40
10			5 71			6 25			6 79
15			8 57			9 38			10 19
Pounds 1		0	11 43		1	0 51		1	1 58
2		1	10 86		2	1 02		2	3 17
3		2	10 29		3	1 53		3	4 75
4		3	9 71		4	2 04		4	6 34
5		4	9 14		5	2 56		5	7 92
6		5	8 57		6	3 07		6	9 51
7		6	8 00		7	3 58		7	11 09
8		7	7 43		8	4 09		9	0 68
9		8	6 86		9	4 61		10	2 26
10		9	6 28		10	5 12		11	3 85
20		19	0 57	1	0	10 23	1	2	7 70
30	1	8	6 86	1	11	3 35	1	13	11 55
40	1	18	1 14	2	1	8 47	2	5	3 40
50	2	7	7 43	2	12	1 59	2	16	7 25
60	2	17	1 71	3	2	6 71	3	7	11 15
70	3	6	8 00	3	12	11 83	3	19	2 95
80	3	16	2 29	4	3	4 95	4	10	6 80
90	4	5	8 57	4	13	10 07	5	1	10 65
100	4	15	2 86	5	4	3 18	5	13	2 49
200	9	10	5 71	10	8	6 37	11	6	4 98
300	14	5	8 57	15	12	9 55	16	19	7 47
400	19	0	11 43	20	17	0 74	22	12	9 99
500	23	16	2 29	26	1	3 92	28	6	0 45
600	28	11	5 15	31	5	7 11	33	19	2 94
700	33	6	8 00	36	9	10 29	39	12	5 43
800	38	1	10 86	41	14	1 48	45	5	7 93
900	42	17	1 72	46	18	4 66	50	18	10 42
1000	47	12	4 57	52	2	7 85	56	12	0 90

Rebate at 6 per Cent.

	13 Moneths				14 Moneths				15 Moneths			
	li.	sh.	d.	c.	li.	sh.	d.	c.	li.	sh.	d.	c.
Shill.	5			3 66			3 9				4 19	
	10			7 32			7 85				8 37	
	15			10 98			11 7			1	0 56	
Pounds	1		1	2 64		1	3 70			1	4 74	
	2		2	5 29		2	7 40			2	9 49	
	3		3	7 94		3	11 10			4	2 23	
	4		4	10 59		5	2 80			5	6 98	
	5		6	1 24		6	6 50			6	11 72	
	6		7	3 89		7	10 20			8	4 47	
	7		8	6 53		9	1 90			9	9 21	
	8		9	9 18		10	5 61			11	1 96	
	9		10	11 83		11	9 21			12	6 70	
Pounds	10		12	02 48		13	1 1			13	11 44	
	20	1	4	4 96	1	6	2 2		1	07	10 88	
	30	1	16	7 4	1	19	3 3		2	01	16 32	
	40	2	8	9 91	2	12	4 4		2	15	9 76	
	50	3	1	0 39	3	05	5 5		3	09	9 21	
	60	3	13	2 87	3	18	6 6		4	03	8 65	
	70	4	5	5 45	4	11	7 7		5	07	8 09	
	80	4	17	7 83	5	4	8 8		5	11	7 53	
	90	5	9	10 31	5	17	9 9		6	05	6 98	
	100	6	2	0 79	6	10	10 09		6	19	6 41	
	200	12	4	1 58	13	1	8 19		13	19	0 83	
	300	18	6	2 37	19	12	6 28		20	18	7 25	
	400	24	8	3 15	26	3	4 37		27	18	1 67	
	500	30	10	3 94	32	14	2 47		34	17	8 09	
	600	36	12	4 73	39	5	0 56		41	17	2 51	
	700	42	14	5 52	45	15	10 65		48	16	8 93	
	800	48	16	6 31	52	6	8 75		55	16	3 35	
	900	54	18	7 10	58	17	6 84		62	15	9 77	
	1000	61	00	7 89	65	8	4 93		69	15	[illegible]	

Rebate at 6 per Cent.

		16 Monet. li. sh. d. c.	17 Moneths li. sh. d. c.	18 Moneth li. sh. d. c.
Shill.	5	4 44	4 70	4 95
	10	8 89	9 40	9 91
	15	1 1 33	1 2 10	1 2 86
Pounds.	1	1 5 78	1 6 80	1 7 82
	2	2 11 55	3 1 60	3 3 63
	3	4 5 33	4 8 40	4 11 45
	4	5 11 11	6 1 21	6 7 27
	5	7 4 89	7 10 01	8 3 08
	6	8 10 67	9 4 81	9 11 90
	7	10 4 44	10 11 61	11 6 72
	8	11 10 22	12 6 41	13 2 53
	9	13 4 00	14 1 22	14 10 35
Pounds.	10	14 9 78	15 8 02	16 6 16
	20	1 9 7 55	1 11 4 04	1 13 0 33
	30	2 4 5 33	2 7 0 06	2 9 6 50
	40	2 19 3 11	3 2 8 07	3 6 0 66
	50	3 14 0 89	3 18 4 09	4 2 6 83
	60	4 8 10 67	4 14 0 11	4 19 0 99
	70	5 3 8 44	5 9 8 13	5 15 6 16
	80	5 18 6 22	6 5 4 15	6 12 0 33
	90	6 13 4 00	7 1 0 17	7 8 7 49
	100	7 8 1 78	7 16 8 18	8 5 1 65
	200	14 16 3 55	15 13 4 37	16 10 3 30
	300	22 4 5 33	23 10 0 55	24 15 4 95
	400	29 12 7 1	31 6 8 74	33 00 6 61
	500	37 0 8 89	39 3 4 92	41 05 8 26
	600	44 8 10 67	47 0 1 11	49 10 9 91
	700	51 17 0 44	54 16 9 29	57 15 11 56
	800	59 5 2 22	62 13 5 48	66 1 1 21
	900	66 13 4 00	70 10 1 66	74 6 2 87
	1000	74 1 5 78	78 6 9 84	82 11 4 51

Rebate at 6 per Cent.

	19 *Moneths*			20 *Moneths*			21 *Moneths*		
	li.	sh.	d. c.	li.	sh.	d. c.	li.	sh.	d. c.
Shill. 5			5 20			5 45			05 70
10			10 41			10 91			11 40
15		1	3 62		1	4 36		1	05 10
1		01	08 82		01	09 82		01	10 80
2		03	05 64		03	07 64		03	09 61
3		05	02 46		05	05 46		05	08 42
4		06	11 29		07	03 27		07	07 22
5		08	08 11		09	01 19		09	06 03
6		10	04 93		10	10 91		11	04 83
7		12	01 75		12	08 73		13	03 64
8		13	10 57		14	06 55		15	02 45
9		15	07 40		16	04 37		17	01 25
10		17	04 22		18	02 18		19	00 05
20	1	14	08 44	1	16	04 36	1	18	00 11
30	2	12	00 66	2	14	06 54	2	17	00 16
40	3	09	04 88	3	12	08 72	3	16	00 22
50	4	06	09 10	4	10	10 91	4	15	00 27
60	5	04	01 32	5	09	01 09	5	14	00 33
70	6	01	05 54	6	07	03 27	6	13	00 38
80	6	18	09 76	7	05	05 45	7	12	00 44
90	7	16	01 98	8	03	07 64	8	11	00 49
Pounds 100	08	13	06 19	9	01	09 82	9	10	00 54
200	17	07	00 38	18	03	07 64	19	00	01 08
300	26	00	06 57	27	05	05 46	28	10	01 63
400	34	14	00 77	36	07	03 27	38	00	02 17
500	43	07	26 96	45	09	01 09	47	10	02 71
600	52	01	01 15	54	10	10 91	57	00	03 26
700	60	14	07 34	63	12	08 73	66	10	03 80
800	69	08	01 53	72	14	06 55	76	00	04 34
900	78	01	07 73	81	16	04 37	85	10	04 89
1000	86	15	01 92	90	18	02 18	95	00	05 43

Rebate at 6 per Cent.

		22 *Moneths*				23 *Moneth*				24 *Monet.*			
		li.	sh.	d.	c.	li.	sh.	d.	c.	li.	sh.	d.	c.
Shill.	5			5	94			6	19			06	43
	10			11	89		1	0	38		1	00	85
	15		1	5	84		1	6	57		1	07	28
Pounds.	1		01	11	78		02	0	75		02	01	71
	2		03	11	56		04	1	51		04	03	43
	3		05	11	35		06	2	26		06	05	14
	4		07	11	13		08	3	01		08	06	86
	5		09	10	92		10	3	77		10	08	57
	6		11	10	70		12	4	52		12	10	29
	7		13	10	49		14	5	27		15	00	00
	8		15	10	27		16	6	03		17	01	72
	9		17	10	05		18	6	78		19	03	42
Pounds	10		19	09	84	1	02	07	53	2	01	05	14
	20	1	19	07	67	2	01	03	06		02	10	28
	30	2	19	05	51	3	01	10	60	3	04	03	43
	40	3	19	03	35	4	02	06	13	4	05	08	57
	50	4	19	01	19	5	03	01	67	5	07	01	71
	60	5	18	11	03	6	03	09	20	6	08	06	86
	70	6	18	08	86	7	04	04	74	7	10	00	00
	80	7	18	06	70	8	05	00	27	8	11	05	14
	90	8	18	04	54	9	05	07	80	9	12	1	28
	100	9	18	02	38	10	06	03	34	10	14	03	43
	200	19	16	04	76	20	12	06	07	21	08	06	86
	300	29	14	07	14	30	18	10	01	32	02	10	29
	400	39	12	09	51	41	05	01	35	42	17	01	71
	500	49	10	11	89	51	11	04	68	53	11	05	14
	600	59	09	02	27	61	17	08	02	64	05	08	57
	700	69	07	04	65	72	03	11	36	75	00	00	00
	800	79	05	07	03	82	10	02	69	85	14	03	43
	900	89	03	09	41	92	16	06	03	96	8	06	86
	1000	99	01	11	78	103	2	09	36	107	2	10	28

The use of these Tables.

I. WHat is the rebate out of 500 pound due 6 moneths hence, to be paid at present; and so how much ready money will satisfie the said debt of 500 pound?

By the Table you shall finde that 14 pound, 11 shillings, 3 pence and half a farthing, is to be abated.

	li. sh, d.
So that, *the debt being*	500 00 00
The rebatement to be subtracted	14 11 3
So there remaines	485 08 09

And so much ready money will satisfie the said debt

II. If you cannot finde the whole debt in one line of the Tables, or if the debt be to be paid at two or three payments, then you must take it out of the Tables severally, and then adde them together.

As suppose *A* hath sold a bargain to *B* of 1500 pound, to be paid at three six moneths, 500 pound a time: what is the value of it in ready money?

The

	li	sh.	d.	q.
The debt is	1500	00	00	0
Rebate of 500l. for 6 moneths	14	11	03	0
Rebate of 500 l. for 12 moneths	28	06	00	2
Rebate of 500 l. for 18 moneths	41	05	08	1
The Sum of the Rebates	84	02	11	3
which substracted from the whole debt, there remains	1415	17	00	1

The money which must be paid at present.

III There is another kinde of Rebatement by way of reducing divers times of payment all into one, which is many times used, but yet it is not altogether so exact as it should be

For Example: Suppose the said debt of 1500 *li.* to be paid at three 6 moneths, what time will the whole debt be due to be paid altogether?

The rule is thus: First, multiply the summes of money, by the times of their payment, and adde the severall products together; thus,

500

500 pounds By 6 moneths	500 pounds by 12 moneths	500 pounds by 18 moneths
is 3000	is 6000	is 9000
		6000
which three added together.		3000
The Sum of them all is		18000

And this product divided by the whole debt 1500 pound, the quotient will shew 12 moneths for the time of payment.

This rule is not much out of the way yet somewhat it fails, as will appear by comparing it with the former. For if the said 1500 pound be to be paid all at 12 moneths then the worth of it in ready money will appear to be but 1415 pound, 1 shilling, 10 pence, 2 farthings whereas the true value of the debt in ready money was before found to be 1415 pound, 17 shillings, one farthing; by this means therefore the Creditour will lose 15 shillings one peny, three farthings more then he ought to rebate.

Yet this way of reducing of payments comes so neer the exact truth, that I cannot prescribe a better way in general, to finde it out. But if any will be so punctual, and think it worth their labour, let them try one by the other, and so finding the difference, which here is 15 shillings; finde

out by the Tables of Intereſt, in how many dayes the 1500 pound will require 15 ſhillings Intereſt; and you ſhall finde the neereſt time is 3 dayes. For the Intereſt of 1500 pound for three dayes is 14 ſhillings, 9 pence: theſe three dayes therefore being taken from the 12 Moneths aforeſaid, ſhews the true time due for the payment of the whole 1500 pound.

IV. If any will be ſo ſtrict in their Rebatements, as to look after any time under a moneth; they may, by the former Tables of Intereſt, finde out the Intereſt of their principall debt for the odde dayes, and adde that to the Rebatement for the moneths, without much errour.

But if they will be more exact, let them, by the Tables of daily Intereſt, finde out the Intereſt of 100 pound for the time deſired, and work by the former rule, according to the rule of proportion.

Thus, if you would know the rebate out of an hundred pound for 190 dayes.

The Intereſt for 190 dayes is 3 pound, 1200 parts. Therefore,

As 103. 1200, *to* 100; So 100, *to* 96, 9744.

Which is 96 pound, 19 ſhillings 6 pence *ferè*.

And thus much for theſe Tables of Intereſt. All that I have ſaid hitherto hath been about

about Intereſt either ſimple or compound, by which you may ſee the good uſe which may be made thereof, and how the abuſe may by avoided and prevented.

And here I thought to have put an end to this little Book. But ſince there are many other things of a generall concernment, and not impertinent to the former Diſcourſe, I ſhall adde ſomewhat concerning a few of them, as briefly as I can.

THE PVRCHASERS PATERN:

The Second Part.

Shewing the measuring of *Board, Land, Timber, Stone,* and the Gauging of *Caske.*

With many other Rules and Tables of daily use for most men.

By *Henry Philippes.*

LONDON.
Printed by *R.* and *W. Leybourn,* for *Thomas Pierrepont,* at the Sun in *Pauls* Church-yard,
MDCLVI.

To the Reader

He that hath any thing to do with Land or Houses, will have some occasion to have some knowledge in the Art of measuring Land, Board, Timber and such like; and therefore I thought good to adjoyn these Geometricall *observations, to the former Discourse: whereby those, whose* Genius *leads them any thing this way, may attain some good knowledge therein, and receive much profit thereby.*

The other things likewise are of such generall concernment and frequent use, that they will be profitable to most: and therefore though they are more commonly written of, yet I hope you will finde somewhat therein worth your reviews and acceptance.

Geo-

Geometricall Obſervations.

Of meaſure, which conſiſts only in length.

THree barley corns make one inch.
Twelve inches make one foot.

Three foot make one yard; which is common Engliſh meaſure, wherewith moſt Engliſh commodities are meaſured. As for the El, though it be commonly uſed among us, yet the Statute takes little or no notice of it, it being a forreign meaſure, and uſed about forreign commodities, as Silks and French Linnens. The length of the El is five quarters of our yard; ſo that five yards are four Els.

Theſe are the meaſures, by which all ſmall quantities are meaſured; but for meaſuring of Land they make uſe of Poles or Rods.

16 *foot and an half make a Pole or Perch.*
40 *Poles make a Furlong.*
8 *Furlongs make a Mile.*

So that in a meaſured Mile, there are,

Poles	320
Yards	1760
Feet	5280
Inches	63360
Barly-corns	190080

But the miles commonly accounted from one

one place to another are more unleſſe within 20 miles round off *London*.

To meaſure things which have length and breadth, as Board, Glaſſe, Pavements, Tyling, wainſcot, and ſuch like.

THeſe things are all meaſured after the ſame way; onely there is a difference in the meaſure by which they are meaſured. For Board and Glaſs are meaſured by the foot; Wainſcot, Pavements, and Tyling, by the yard.

Now in meaſuring any of theſe, an Inch, Foot, or Yard, is not onely ſo much in length, but ſo much in breadth too, that is, ſo much ſquare; or if it lacks of it one way, it muſt be made up the other way. So that upon this account there is

9 ſquare feet in one yard.
144 ſquare inches in one foot.
72 ſquare inches in half a foot
36 ſquare inches in a quarter of a foot.

Now in the meaſuring of any of theſe things, you muſt conſider what form or faſhion it is of; and accordingly there are ſeverall rules

Firſt, for Boards, they are uſually cut out in long ſquares. And to meaſure ſuch you muſt firſt take the breadth thereof in inches,

Inches, and likewiſe the length thereof in inches; and multiply them one by the other; ſo you ſhall have the content thereof in inches: then to know how many feet it is; divide this number by 144, the ſquare inches in one foot, and the quotient will ſhew the number of feet; and if any thing remain, it is ſo many ſquare Inches; which you may value by the former Table.

10	60

Thus for Example: Suppoſe a Board to be 10 Inches broad, and 5 foot, or 60 Inches long: Multiply 60 by 10, it makes 600, which divided by 144, the quotient wil be 4, and there remains 24. So that the board is four feet, and two thirds of one quarter of a foot.

This is the uſuall form of boards; onely ſometimes they are a little narrower at one and then at the other; in this caſe you may take the breadth in the middle of the board; and then do, as before.

But becauſe moſt men have not skill thus to divide and multiply; therefore they make uſe of Tables and lines ſet upon rules, ſhew-

-ing how many inches in length fitted to any breadth will make a foot; and so by their Compasses or Ruler, they try how many times the said quantity is conteined in the length of that board, and reckon it to be so many foot long. This way is ancient, and is much used; and I no wayes finde fault therewith: and the Tables hereof are so common, that I shall not need to set them down. Onely for variety, and in conformity to some following conclusions, I shall present you with this new Table of Board-measure, which may be used as it stands in the book, or drawn into a line, and set upon a Ruler.

* here y[e] Inches of y[e] breadth from
19. are (115) set up two lines
for right and y[e] reach to 38.
~~[illegible] be but to 36.~~

A Table of Board-measure.

Breadth of the board in inches.	The Quantity of one foot thereof in length. F. parts
1	0,083
2	0,167
3	0,250
4	0,333
5	0,417
6	0,500
7	0,583
8	0,667
9	0,750
10	0,833
11	0,917
12	1,000
13	1,083
14	1,167
15	1,250
16	1,333
17	1,417
18	1,500

Breadth of the board in Inches.	The quantity of one foot thereof in length. F. parts
19	
20	
21	1,583
22	1,667
23	1,750
24	1,833
25	1,917
26	2,000
27	2,083
28	2,167
29	2,250
30	2,333
31	2,417
32	2,500
33	2,583
34	2,667
35	2,750
36	2,833
~~37~~	2,917
~~38~~	3,000

This Table shewes the proportion which one foot in the length, having any number of Inches in the breadth hath to one foot of board measure which should contain 144 square inches, as aforesaid.

It is thus made by this rule,

As 12 Inches in breadth, and one foot in length,

Is to one foot of board-measure;

So any other number of Inches in breadth, multiplied by one foot, or 12 Inches in length,

To the proportional part thereof to a foot.

For Example; if you would finde the proportion which one foot length of 10 Inches broad, hath to a foot. Multiply this 10 inches by 12, it makes 120. Then,

As 144, to 1, foot; so 120, to 0,833.

That is, somewhat above three quarters of a foot, being 833 thousand parts of a foot.

But now for the use of this Table.

Having measured the breadth of your board, finde it out in the Table, and take the number you finde there, and multiply it by the feet which are contained in the length of the board; so cutting off the three last figures, you shall have the number of feet, and the figures cut off will shew the parts of a foot.

Thus

Thus in the former example, the board being 10 inches broad, and 5 feet long.

The number for 10 *Inches broad is* 0,83
Which multiplyed by 5 5

Makes 4,165

That is, four feet, and two thirds of a quarter, as before.

If you think this too much labour you may leave out the laſt figure in the Table, and ſo work by 100 parts of a foot, but the other will be more exact.

And thus much for theſe uſuall forms of Boards; as for any other formes of Pavements, Glaſſe, or Wainſcot, you may ſee how they are to be meaſured in the following examples of land, which I account the more uſeful and Gentle employment, and therefore ſhall ſpeak a little more largely of it.

How to meaſure any piece of Land.

FIrſt, in general, Land is meaſured by a Pole, Perch, or Rod, which is uſually 16 feet, and an half long; yet in ſome places they uſe a Pole of 18 feet, eſpecially for Wood-lands.

Now, according to the Statute, 4 Poles in breadth, and 40 Poles in length make an Acre. So that *One*

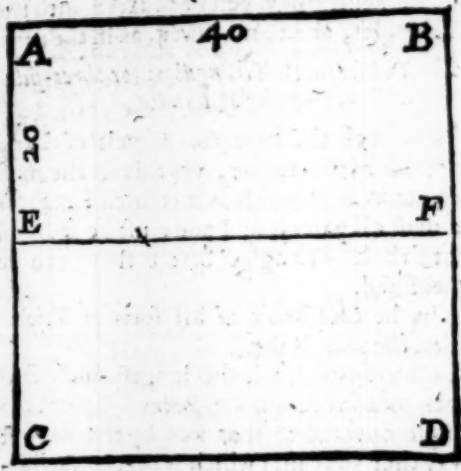
One Acre contains 160
Half an Acre contains 80 } *ſquare Poles.*
A quarter, or 1 Rod, 40

Some ſue Chains of four or more Poles long, and divide them, as their fancy pleaſeth; I ſhall onely ſhew you how to do it by Poles.

But now ſince every field and parcel of Land hath almoſt a different forme: I ſhall ſhew you firſt, how to meaſure ſome of the generall and common forms; and then how to reduce others thereunto.

I. *How to meaſure a ſquare piece of Land.*

THis is one of the moſt common formes, and moſt eaſily to be underſtood. The meaſuring hereof, is, as I ſhewed before, in the board. For whether it be a long ſquare, as that was, or that the ſides be every way equal, as this is: Multiply one of the ſides by another of the ſides next unto it, (not oppoſite to it) and the product ſhewes the content in Poles; which divided by 160, will give the content in Acres.



Thus, let the ſquare *A B C D* repreſent a piece of Land, being 40 Poles ſquare each way. This 40 multiplied by 40, make 1600 and this divided by 160 yields 10, which ſhews the piece of Land is juſt 10 acres.

But now if this ſquare were longer one way then another; as ſuppoſe the upper half of it, *A B E F*. Here now *A B* is 40 Poles, but *A E* is but 20; theſe two multiplied, make 800; and this divided by 160, yields 5 Acres.

But here note, that every four-ſided piece of Land is not ſquare, neither can thus be meaſured; therefore ſuch four-ſided irregular

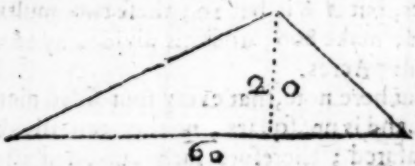
gular figures may best be reduced into two Triangles, and so measured, as in the next.

II *To measure a Triangular, or three-sided piece of Land.*

THough there are few parcels of Land lie in this forme, yet this is the most common form which is measured; because almost all parcels of Land must be reduced into these Triangles before they can be measured.

In the measuring of all sorts of Triangles, the rule is this,

Observe which is the longest side, and then measure how many Poles it is from the angle opposed to that side by the nearest way that you can, (which is perpendicularly) to that long side; as is represented by the pricked line in the Triangle following. Then multiply the halfe of this line by the whole long line; or the half of the long line by the whole of this line, as you shall see most convenient; and so you shall have the content of the Triangle in poles, which you may reduce into acres, as before.



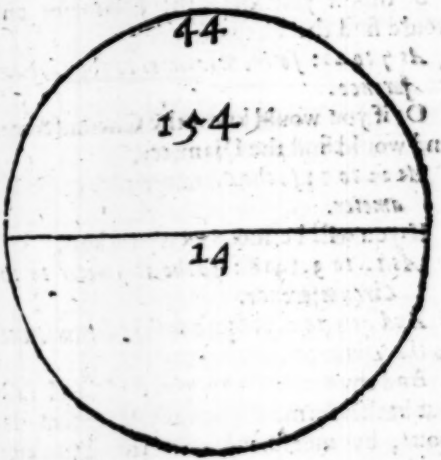
Thus

Thus, ſuppoſe the longeſt ſide of the Triangle to be 60 Poles; and the pricked, or perpendicular line 20 Poles. You may multiply either 60 by 10, or 20 by 30, the product is 600, which divided by 160, ſhews the content to be three Acres, and three Rods, or quarters.

III *To meaſure a Circular piece of Land.*

THe rule, for the meaſuring of a Circular piece of Land is this, Multiply half the compaſſe by half the Diameter.

Note, the Diameter is a line drawn croſſe the midſt of the Circle.



Thus, the Diameter being 14 Poles, and the Compaſſe 44: the half of both theſe is 7 and 22; which multiplied together, yield 154 Poles, which lacks onely ſix Poles of an Acre.

Now to this purpoſe it may be ſometimes neceſſary to know the proportion that there is between the Diameter, and the circumference of a Circle. I confeſſe though the ordinary proportion of 7 to 22 is ſomewhat too much, yet it is but about 1 in 3000, which will breed no great difference in theſe operations.

So that if you know the Diameter and would find the circumference.

As 7 to 22: ſo the Diameter to the Circumference.

Or if you would know the Circumference and would find the Diameter.

As 22 to 7: ſo the Circumference to the Diameter.

If you will be more exact reckon,

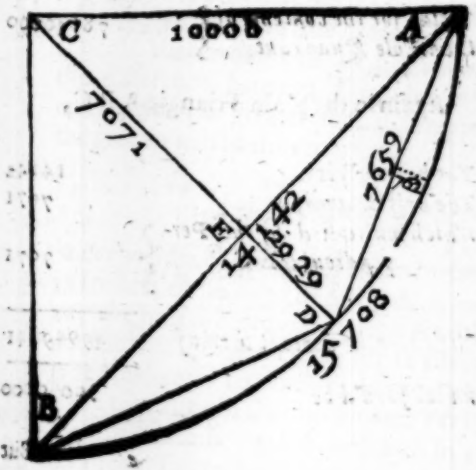
As 1, to 3,1416: ſo the Diameter to the Circumference.

And as 1, to 0,3183: ſo is the Circumference to the Diameter.

And thus when any piece of land falls out in this forme, you may ſpare ſome labour, by meaſuring only the Diameter, or the Circumference, and finding out the other by theſe rules as aforeſaid. The

The half-Circle, and quarter-Circle or any other part of a Circle more or leſſe, which hath one point or angle at the center of the circle, may be meaſured by the former rule, *viz.* half the compaſſe or arching ſide multiplied by the ſemidiameter, being one of the ſtraight ſides.

But other Sections are very hard and troubleſome, and ſcarce to be found out, without knowing the content of the whole Circle or Semicircle; and thereby the greater part thereof; and ſo the remainer is the leſſer Section.



Some, to avoid this trouble, measure the perpendicular line, (or the part of the Diameter) by the half of the Arch. But this gives the content very much too little.

For Example.

Suppose in the Quadrant A D B C, the Radius or Semidiameter being 10000; and

the arch A D B	15708
Half this compasse	7854
Multiplied by the Radius,	10000
Yields for the content of the whole Quadrant	78540000

Again in the plain Triangle A B C,

The base A B *is*	14142
The half whereof is	7071
Which multiplied by the Perpendicular E C	7071
Yields for the content thereof	49999041
Which should be	50000000

But

But the numbers 7071 being not perfect numbers, cause this small difference, which is not to be regarded.

Now the content of the whole Quadrant being	78540000
And the content of the Triangle A B C, *a part thereof being substracted*	50000000
Remains for the Section A D B E	28540000

This being the true content of the said Section, if you try the other Rule by it, you shall finde it much too little.

For the half of the arch A D B *is*	7854
which multiplyed by the Perpendicular D E	2929
Yields onely	23004366
Whereas it should be	28540000

But you may save much of the former trouble, and will come more neer the truth, if you take the Chord A B, and the perpendicular D E, and multiply the whole of the one by two thirds of the other. Thus,

The Chord A B *being*	4142
Multiplied by two thirds of 2929	1953
Yields	27619326

Which

which indeed should be 2854000

But yet it is much neerer then the number found the other way, viz. 23004396

And if the Chord be lesse, this way will be more exact. And therefore if you will be so curious; you may first finde the content of the plain Triangle A D B E in this Section, and then the content of the two little Sections, A D and D B.

Thus the content of the plain Triangle A D B E *will be found to be* 2071095

And the content of the Section A D will thus be found.

The Chord A D *is*	7659
The Perpendicular	762
The two thirds thereof	508
By which multiplying the Chord	7659
It yields	3890772

For the content of the Section A D.

Now the Section D E is like to the Section A D in every respect, therefore,

This

The half-Circle, and quarter-Circle or any other part of a Circle more or lesse, which hath one point or angle at the center of the circle, may be measured by the former rule, *viz.* half the compasse or arching side multiplied by the semidiameter, being one of the straight sides.

But other Sections are very hard & troublesome, & scarce to be found out, without knowing the contents of the whole Circle, or Semicircle; and therby the greater part therof; and so the remainer is the lesser Section.

Som, to avoid this trouble, measure the said Section, if you try the other Rule by it, you shall finde it much too little.

For the half of the arch A D B *is*	7854
which multiplyed by the Perpendicular D E	5
Yields onely	23004366
Whereas it should be	25400000

But you may save much of the former trouble, and will come more neer the truth, if you take the Chord A B, and the perpendicular D E, and multiply the whole of the one by two thirds of the other. Thus,

The Chord A B *being*	14142
Multiplied by $\frac{2}{3}$ *of* 2929	1953
Yields	27619326

The half-Circle, and quarter-Circle or any other part of a Circle more or lesse, which hath one point or angle at the center of the circle, may be measured by the former rule, *viz.* half the compasse or arching side multiplied by the semidiameter, being one of the straight sides.

But other Sections are very hard & troublesome, & scarce to be found out, without knowing the contents of the whole Circle, or Semicircle; and thereby the greater part thereof; and so the remainer is the lesser Section.

Som, to avoid this trouble, measure the said Section, if you try the other Rule by it, you shall finde it much too little.

For the half of the arch A D B *is*	7854
which multiplied by the Perpendicular D E	5
Yields onely	23004366
whereas it should be	28540000

But you may save much of the former trouble, and will come more neer the truth, if you take the Chord A B, and the perpendicular D E, and multiply the whole of the one by two thirds of the other. Thus,

The Chord A B *being*	14142
Multiplied by 2 of 2929	1953
Yields	27619326

which indeed should be 28540000

But yet it is much nearer } 23004396
then the number found }
the other way, viz. }

And if the Chord be lesse, this way will be more exact. And therefore if you will be so curious; you may first finde the content of the plain Triangle *A D B E* in this Section, and then the content of the two little Sections, *A D* and *D B*.

Thus the content of the plain }
Triangle A D B E *will be* } 2071095
found to be }

And the content of the Section *A D* will thus be found.

The Chord A D *is*	7659
The Perpendicular	761
The two thirds thereof	508
By which multiplying the Chord	7659
It yields	3890772

For the content of the section *A D*.

Now the Section *D E* is like to the Section *A D* in every respect; therefore,

This

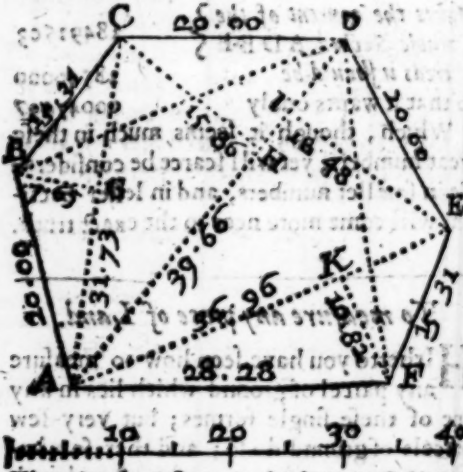
This number doubled	3890772
Is the content of both the sections	7781544
which added to the Triang. ADBE	20710959
Makes the content of the whole Section ADBE	28492503
whereas it should be	28540000
So that it wants onely	00047497

Which, though it seems much in these great numbers, yet will scarce be considerable in smaller numbers, and in lesser Sections will come more neer to the exact truth.

To measure any piece of Land.

HItherto you have seen how to measure any parcel of ground which lies in any one of these single formes; but very few parcels of gronnd do so; and therefore before you can measure it, you must reduce it into some of these foresaid figures. Now the most common and best form into which you may reduce any piece of ground, is to lay it out in severall Triangles: and this you may do either in the field it self, (if it be not very great) or else you must draw a plot of the field, and so draw severall lines overthwart it; which may divide it into as few Triangles (taking in the whole) as possible may be: and then finding the content of

these severall Triangles, and adde them altogether, and so you shall have the content of the whole field.



Thus in this figure which represents a piece of ground, having six unequall sides, you may reduce it into four Triangles, by drawing the three lines *A C*, *A D*, *A E*, from the angle at A.

Now to finde the content of this field; first, in the Triangle *A B C*, you must measure the longest line thereof *A C*, which is 31 Poles, 73 hundred parts; then measure the perpendicular line *B G*, which is 7 Poles, 65 parts. Now multiply the one of

these

theſe numbers by the half of the other, *viz.* 31. 73. by 3. 82. and ſo you ſhall finde the content of this triangle to be 121 poles, 21 parts.

Secondly, in the triangle *A C D.*

	poles	parts
The length of the line A D *is*	39	66
Length of the Perpend. C H *is*	15	86
So the content thereof is	314	50

Thirdly, in the triangle *A D E.*

	poles	parts
The length of the line A D *is*	39	66
Length of the Perpend. E I *is*	18	48
So the content thereof is	366	46

Fourthly, in the triangle *A E F.*

	poles	parts
The length of the line A E *is*	36	96
Length of the Perpend. F K *is*	10	82
So the content thereof is	199	95

Now if you adde the content of theſe four triangles altogether, *viz.*

	poles	parts
1 *The Triangle* A B C	121	21
2 *The Triangle* A C D	314	50
3 *The Triangle* A D E	366	46
4 *The Triangle* A E F	199	95
The Sum of them is	1002	12

Which is the content of the whole field; the which if you divide by 160, to bring it

into acres, shews 6 acres, 1 rod, 2 poles, and 12 parts.

The most difficult task in this work is to finde the true length of the perpendiculars, especially if you measure it in the field it self, which must alwayes be taken very exactly.

To which purpose, there will be need of two persons to help one another.

Thus, if you would finde the length of the perpendicular *B G*, in the triangle *A B C*. Let one party stand at the angle *A*, and let the other go from *A* toward *C*, as directly as he can. Now he that stands at the angle *A*, will plainly see whether the other swerveth to the right or left never so little, and must direct him; this must be his part in the work. The other man that walks from *A* towards *B*, must carefully observe when he comes just against the angle *B*, that it may be just upon his side, which will be when he is at *G*, from whence measuring up to *B*, he shall have the true lenght of the line *G B*.

But if you have a plot of the field in paper, then you need onely take your Compasses, and setting one foot in *B*, open the other, so that it may touch the line *A C* in the neerest ~~thereto, which is in the neerest~~ place thereto, which is in *G*, then measure this distance upon your Scale of Poles, and

so

ſo you ſhall have the length thereof.

By this you may perceive, that if you can draw a true plot of the field in paper, it will be a great help to the meaſuring thereof. This may be eaſily done by many Inſtruments, and thoſe which have skill to uſe them. Or if a man have but a Ruler with Sights, and ſome convenient device to ſerve inſtead of a ſtool or table in the field, that ſo he may lay a ſheet of paper thereon, he may draw the foreſaid lines to the ſeveral angles of the field; and ſo meaſuring the length of them, prick them down with his compaſſes, and drawing the boundary lines, he ſhall have the true plot of the field.

If this alſo be wanting, yet with a little more labour in meaſuring, you may thus perform it with your Ruler and Compaſſes.

Firſt, being at the angle A, meaſure the ſide A B noting it down in your book, as alſo the point of the Compaſs which it tends to; which for this purpoſe you may gueſs at neer enough, if you have any skill therein, or elſe make uſe of any Sun-dial with a Needle and Compaſs. Then likewiſe meaſure the Line B C, noting the length thereof, and the point of the Compaſs it tends neereſt to. Thirdly, meaſure from C to A, and thus you have the three ſides of the triangle A B C.

Having these three sides, you may with your Ruler and a pair of Compasses, thus set out this triangle in any paper. First, drawing the line A C, and setting off the length thereof out of any Scale of equal parts, make two points at the ends thereof at A and C. Then taking the length of the line A B out of the Scale, set one foot of your Compasses in A, and with the other make a little arch at B. And then taking the length of the line B C out of the Scale, set one foot of your Compasses in C, and with the other cross the foresaid arch at B; so drawing the lines A B, and B C, you shall have the triangle A B C truly drawn upon the paper.

In like manner, measuring the side C D, and the breadth of the field from A to D; and setting off the length of these two lines from the points A and C, as before; so you shall have the one half of the field truly drawn.

Then measuring the side D E, and the breadth A E, from the points A and D you may make the angle at E, and so set of another part of the field contained in the triangle A D E.

Lastly, measure the sides of the field E F and A F, and therewith from the points A and E, make the angle at F.

Thus

Thus you have all the angles of the field, ſo that by drawing the lines from angle to angle, you have the true forme thereof, and the lines which you meaſure croſſe the field will be of great uſe in caſting up the content thereof, being the baſes of four Triangles; ſo that you have nothing to meaſure but the perpendiculars, which you may finde out by your Scale, or now ſee how to meaſure them more exactly in the field it ſelf.

The fitteſt Inſtrument uſed for this purpoſe is the Plain Table; which, for a ſhift you may imitate with any Ruler with ſights upon it, placing this Inſtrument at one corner of the field, as at A, you muſt turn the Ruler to the ſeverall angles B, C, D. E, F, and draw the lines A B, A C, A D, A E, A F; then meaſure thoſe diſtances, and ſetting of the length thereof by your Scale and Compaſſes; ſo you ſhall have the exact proportion of the field.

Or if you think this meaſuring too much labour, you may do thus, having taken the proportion of the angles at A, as before, you need meaſure onely any one of the lines (but the moſt oppoſite to it is the beſt) as A D; then ſet up your Inſtrument at D, and ſet off the length of the line A D 39 Poles, 66 parts out of your Scale from A to D;

D; make this D your Centre-point, and ſo turning your Inſtrument, that the line D A may point directly to the angle at A, move your Ruler about to the other angles C B, F E, and draw the lines D C, D B, D F, D E, and where theſe lines croſſe the foreſaid lines, there lies the true place and poſture of theſe bounds of the field, And if you have a care to draw theſe lines, exactly, you may by your Scale and Compaſſes meaſure the length of any of theſe lines, almoſt as exactly as in the field it ſelf.

And thus alſo at two ſtations, you may draw the plot of any larger piece of ground, or the platform of an whole Countrey, with the true diſtances of all the Towns and Villages therein, which you can ſee from both theſe places.

But many times it falls out, that in meaſuring great places or Woods, or Hilly grounds, you can ſee but few of theſe angles at once. In this caſe, you muſt go round about the wood or field, meaſuring the ſides thereof from angle to angle, and by your Inſtrument very diligently obſerving the quantity or proprtion of theſe angles: So you ſhall have the true Symmetry of the field upon your paper, which you may divide into triangles, and ſo finde the true quantity thereof, as before.

But

But theſe things require a larger Diſcourſe, I have onely given you a taſte; if you pleaſe, you may be better inſtructed by thoſe who have written at large and expreſly hereof, as Mr. *Rathborn*, Mr. *Diggs*, and Mr *Leybourn* in his *Compleat Surveyour*.

Of the meaſuring of Solid Bodies.

IN the meaſuring of timber, ſtone, and ſuch like ſolid bodies, there muſt be reſpect had not only to the breadth and length, but alſo to the thickneſs. And there are many common rules uſed in the meaſuring of theſe things, which deſerve ſome corrections.

Firſt, herein you muſt know, that a foot of timber is a foot ſquare every way, *viz.* in length, breadth, and thickneſſe: ſo that it is twelve times more then a foot of Board; a foot of Board being but 144 Inches, but a foot of timber is 1728 Inches; and every Inch is ſquare like a Die, and ſo is the foot alſo ſuppoſed to be; or if it want of this, either in breadth, or in thickneſs, it muſt

have it in length: ſo that in what form ſoever it be, you muſt reckon thus:

1728 *ſquare Inches make one Foot.*
864 *ſquare Inches make half a Foot.*
432 *ſquare Inches make a quarter of a Foot.*

The moſt common ſhape which timber is brought into before it be meaſured is a long Square, having equal ſides; for trees growing, for the moſt part, round, by cutting off from each ſide alike, they come readily into this Square.

Now to finde the content of ſuch a piece of ſquared timber, you muſt multiply the Inches of the breadth by the Inches of the thickneſs, and then multiply this product by the Inches of the length; ſo you ſhall have the whole ſolid content in Inches, which if you divide by 1728, the Inches in one foot; the quotient will ſhew you how many feet are in the piece of timber.

But this way, though very exact, may ſeem ſomewhat too tedious, and therefore men, who daily uſe hereof, have tables and lines upon their Rulers, by which having meaſured the ſquare of the tree, they know how much in length will make a foot of timber; and

and ſo taking out this with their Compaſſes, they meaſure how many times that length is found in the length of the piece of timber; and ſo conclude it to be ſo many feet.

This way, as I ſhall not ſpeak againſt it, ſo it is ſo common, that I need not ſet down the tables thereof; but ſhall preſent you with this new table, which you will finde ſomewhat more ready and exact, eſpecially if you uſe your pen.

A Table shewing the true quantity of one foot length, of any true squared piece of timber for Inches and half Inches.

Inches square.	F.pts.		F.pts.		F.pts.
½	0,002		1,085		4,166
1	0,007	13	1,174	25	4,340
	0,016		1,266		4,513
2	0,028	14	1,361	26	4,694
	0,403		1,460		4,877
3	0,062	15	1,561	27	5,063
	0,085		1,668		5,250
4	0,111	16	1,778	28	5,445
	0,140		1,891		5,670
5	0,174	17	2,007	29	5,840
	2,210		2,127		6,043
6	0,250	18	2,250	30	6,250
	0,293		2,377		6,460
7	0,340	19	2,507	31	6,673
	0,390		2,641		6,890
8	0,444	20	2,778	32	7,111
	0,502		2,918		7,333
9	0,562	21	3,062	33	7,562
	0,627		3,210		7,780
10	0,694		3,440	34	8,028
	0,765	22	3,516		8,283
11	0,840	23	3,673	35	8,507
	0,919		3,835		8,750
12	1,000	24	4,000	36	9,000

The

The Demonſtration of this Table.

AS the common Tables of Timber-meaſure, ſhew how many Inches and parts make a foot of timber, the timber being any number of Inches ſquare; ſo this ſhews you by the ſquare of the timber-log in Inches, how many feet or 1000 parts of a foot are conteined in one foot length thereof.

Now becauſe ſome may deſire to enlarge this table, that ſo it may ſhew not onely for the ſquares of Inches and half Inches, but the quarters, or tenth parts of Inches: (though theſe may be well enough by the proportion between the Inches and half Inches) yet I ſhall ſhew you the ground-work of the table, and ſo you may enlarge it at pleaſure.

A foot of timber, you all know, ought to be 12 Inches ſquare every way, *viz.* 12 inches in breadth, 12 inches in thickneſs, and 12 Inches in length. Therefore this proportion will follow.

If

If the square of 12 Inches which is		144
Require 1 foot in length, which is parts		1000
what shall any other Square, viz. the Square of 6?	which is	36
The answer will be		0 250

The use of the Table of Timber-measure.

HAving the true square of any timber-log in Inches, and the length thereof in feet, to know the content thereof in feet.

Take the number answering to the square of Inches out of the Table, and multiply it by the length in feet.

Thus, a piece of timber 18 Inches square, and 25 foot long.

The number answering to 18 Inches square is	2,250
Which multiplyed by 25 the length	25
	11|250
	45|000
Yields	56|250

Viz. 56 feet, and one quarter.

Here

Here may ſeem ſome difficulty in finding the product of theſe mixt numbers, but you may ſee how to do it in *pag.* 44.

If you think this ſomewhat too tedious, you may leave out the laſt figures of the number, and work onely by 100 parts of a foot.

Now for the more readineſs, and alſo for the more exactneſs, you may project this table of timber-meaſure into a line upon your Ruler, in ſuch a manner, that it ſhall ſerve better then the former table.

But becauſe the foreſaid table falls out in odd parts, which will be very troubleſome to divide; therefore it will be worth the while, to finde how many inches and parts any certain number of the parts of this line will require, which you may thus finde, and ſo inlarge the following table as you pleaſe.

Take the number 144 for 1000 parts, or 12 Inches, as before, and multiply it by the parts you deſire, and extract the ſquare Root out of the product: note, if it fall out in equal parts, add ſome ciphers to it, that ſo you may have the fraction in a thouſand parts at leaſt.

Thus

Thus for

Parts	*Square*	*Roots*
0001	000144	0.379
0010	00144	1.200
0100	0144	3.795
1000	144	12.000

Having thus made the Table, or making uſe of this already made, divide your Ruler firſt into Inches, and then each inch into 10 or 1000 parts, and out of the table you ſhall readily ſet of the parts of the line of meaſure; which being done handſomely and truly, will ſhew you the quantity of timber in one foot length, of any number of Inches ſquare, to the tenth or 100 part of an inch, and to the 1000th part of a foot; ſo that having the line, you will have no need of the former Table.

This you may ſee more plainly how to perform, by the Gauging-line, which I have drawn after this ſort in its following place.

You may alſo draw the like line for Board-meaſure, onely by dividing each foot of your Ruler into 100, or 1000 parts.

A Table for the division of the Line of Timber-measure.

Parts of the line of Timber-measure.	In.pts.		In.pts.		In.pts.
1	0,379	400	7,589	1500	18,974
2	0,537	500	8,486	1600	19,349
3	0,657	600	9,295	1700	19,718
4	0,759	700	10,040	1800	20,080
5	0,849	800	10,734	1900	20,435
6	0,929	900	11,384	2000	20,785
7	1,004	1000	12,000	3500	22,450
8	1,073	1100	12,586	4000	24,000
9	1,138	1200	13,145	4500	25,456
10	1,200	1300	13,682	5000	26,833
20	1,697	1400	14,198	5500	28,143
30	2,078	1500	14,697	6000	29,393
40	2,400	1600	15,179	6500	30,594
50	2,683	1700	15,646	7000	31,748
60	2,939	1800	16,100	7500	32,863
70	3,175	1900	16,541	8000	33,941
80	3,394	2000	16,971	8500	34,986
90	3,000	2100	17,390	9000	36,000
100	3,795	2200	17,799	9005	36,986
200	5,367	2300	18,199	1000	37,948
300	6,573	2400	18,500		

NOw the use of this line being set upon your Ruler, will be very ready. For measuring the side of any square piece of Timber, you need never look how many Inches square it is, but the line it selfe counting from the right end thereof, will give you the number, which you must multiply by the length of the piece of Timber measured in feet and hundred parts.

Thus, as before if you finde the side of a piece of Timber to reach to 2,250 in this line, and the length thereof to be 25 foot, the content thereof is 56 feet and 250 parts, or a quarter of a foot.

To measure Timber, which is not square exactly.

THough this be the common forme of Timber, after the first hewing, yet many times by some accident, of by after sawing, there are many pieces of Timber thicker one way then another.

Now in this case it is usuall with some men to adde the broader and the narrower sides together, and so to take the half thereof for the true square.

But

But this must not alwayes be so slighted over, lest you run into great errour. For though the errour will be little, when the difference between the sides is not much; yet the greater that difference is, the greater will be the errour.

For Example.

Let the sides of the timber be 10 Inches, & 12 Inches; these two added together, make 22, the half whereof is 11; but yet this is not the true square thereof: for 11 times 11 is 121; whereas 10 times 12 is 120, which is the true Area of the said square. Yet here the difference being but one inch in 120, may seem somewhat tolerable.

But now let the sides of the Timber be 12 inches one way, and 6 the other way; these two added together make 18, and the half thereof is 9. Now the square of 9 is 81, but the true square of the Timber is found by multiplying 12 by 6. so the area is 72. Here you see the errour will be intolerable. And it is so much the more unconscionable, because it gives the buyer so much lesse then his due.

Mr. *Bedwell* hath framed a very ingenious Ruler for this purpose, if it be carefully made.

But

But the beſt way is to multiply the two ſides, and ſo finde the true Area of the plain; and then by this table, which you may alſo project into a line upon your Ruler finde out the proportion of a foot, and ſo multiply it by the length in feet, as before.

Likewiſe, if your timber-log have any other then a ſquare form, whether it be regular or irregular, you muſt finde the area thereof, and ſo you ſhall have the quantity of one foot length thereof by this Table.

Thus Area the being		400 *Inches.*	
		foot	*parts*
The quantity of one foot by the table is	}	2.	778
Thus multiplied by the length	30 *feet*		30
Shews the content			83,340

A

A Table shewing the solid Content of one foot length, of any piece of Timber, according to the Area or superficial Content, taken at the end thereof.

The Inches of the Area.	Feet parts.		Feet parts	
1	0	007	200	1 389
2	0	014	300	2 083
3	0	021	400	2 778
4	0	028	500	3 472
5	0	035	600	4 167
6	0	042	700	4 861
7	0	049	800	5 556
8	0	056	900	6 250
9	0	062	1000	6 944
10	0	069	2000	13 888
20	0	139	3000	20 833
30	0	208	4000	27 778
40	0	278	5000	34 722
50	0	347	6000	41 666
60	0	417	7000	48 611
70	0	486	8000	55 555
80	0	556	9000	62 500
90	0	625	10000	69 444
100	0	694	20000	138 888

To measure round Timber.

THe way commonly used is to gird these round pieces of timber about with a string, and so doubling the string, to take the fourth part thereof for true square.

As for Example.

If the compass of the tree be 48 Inches, they reckon 12 Inches for the true square thereof.

But this is very false, as you may see by this little Circle, casting it up after the common way.

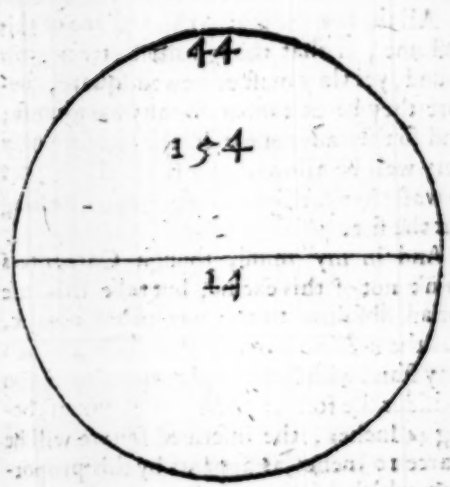
The Diameter of the Circle is 14 Inches, the compass 44 Inches. This is, according to that rule.

As 7, to 22:

So the Diameter, to the Compass.

Then for the content of this Circle, if you multiply half of the compass, which is 22; by half of the diameter, which is 7; the true content will be 154 Inches.

Where-



Whereas if you had taken a quarter of the compaſs, which is 11, for the ſquare root of the circle; this multiplied in it ſelf, wou'd yield but 121 Inches; which wants 33 Inches of the true content: ſo there would be loſt above a fifth part thereof. And thus there will be in meaſuring any other round timber, by this rule, of what compaſs ſoever it be, ſomwhat above a fifth part thereof will be given away.

All that can be ſaid in the defence of this cuſtome, is that though moſt trees grow round, yet they muſt be hewed ſquare, before they be fit timber for any uſe almoſt; and ſo this advantage in the meaſure may very well be allowed, for that which goes to waſte in the chips being good for nothing but the fire.

And in my mind, though Carpenters think not of this excuſe, but take this rule for an abſolute truth; yet this I ſuppoſe, was the firſt occaſion of this Rule, which may ſtand with ſome good reaſon. For if you conſider the former circle, the compaſs being 44 Inches, the inſcribed ſquare will be ſcarce 10 Inches, as appears by this proportion, which you may uſe for any other.

As 1,100,225
So the compaſs 44 *Inches*,
To the inſcribed ſquare 9 *Inches*, 900 *parts*.

This is the greateſt Square which ſuch a round piece of timber can be hewen to, and this multipled in it ſelf, yields 98 Inches; 010 parts for the Area thereof. Now if you add theſe two Areas together, *viz.*

The

	Inches
The Area of the inſcribed ſquare	98
And the full Area of the Circle	154
The ſum thereof will be	252
And the middle or mean thereof	126
And the content by this Rule was	121

So that this gives an indifferent allowance between the buyer and ſeller; it being thus meaſured, neither to the full extent, becauſe of the waſte: neither according to the exact ſquare thereof, becauſe that which is cut off, though it be not ſo good as the other, yet it may be good for ſomewhat.

But yet for all this, it is fit that the true content of the timber, let it be in what form ſoever, ſhould be exactly known, and this is that which the meaſurer ought to perform. As for the goodneſs of the timber, and the waſte thereof, men muſt conſider that in the price of the Foot or Tun; and ſo I believe they do: and therefore being allowed for the waſte in the price thereof, there is no reaſon but they ſhould pay for the full meaſure which they have, and not have any allowance in that alſo.

But many deſire to buy timber round, and will give as great a price for it as for ſquare timber, becauſe of the allowance which they take to themſelves in the meaſure.

For first, they compasse the tree, and divide the line into three parts, casting away one third part for the waste of the bark and rinde: then the other two parts of the line they divide into four parts, and so take one quarter thereof for the true square. Thus in the foresaid tree, whose compasse was 48 Inches, a third thereof, 16 inches allowed for waste, there remains but 32, and then a quarter of this is but 8 inches, whereas you see before, this tree will make a perfect square of almost 10 inches, and all the other which is cut off will not be quite lost, so that they will have at least the one half of the timber by this way of allowance and false measure.

Therefore by the way you may take notice of the different value which there ought to be, between good cleer timber perfectly squared, and that which is not.

The difference between the content of the circle, and the square which may be wrought out of it, as you may see before, is above one third part.

But because all this, specially in great trees, need not go to chips and waste; you may well in such large round timber, reckon a fifth part for waste, and so the price of five feet thereof to be equall to four feet of square timber; and in lesser pieces you may

may reckon a quarter for the waſte, and ſo four feet thereof to be worth as much as three, and ſo let it be meaſured to the full content thereof.

Therefore now I ſhall, as briefly as I can, ſhew you the readieſt wayes to finde the true content of any round piece of timber.

And you may finde this out either by the Diameter, or by the circumference.

If you work by the Diameter, the rule is this;

As 1, *to* 0,7854;
So the ſquare of the Diameter.
To the content of the circle.

If you work by the compaſſe of the circle, which I think will be beſt and moſt ready to be found, then take this rule:

As 1, *to* 0,0796;
So the ſquare of the circumference
To the content of the Circle.

And thus having found the content or Area of the circle, you may by the Table (*page* 145) finde how many feet are in one foot length thereof.

Or you may work this ſomewhat ſhorter, thus;

As 1, to 0,0079526;
So the square of the circumference,
To the proportion of one foot in length
thereof, to the measure in feet.

And according to this rule, I have framed this Table; to help those that are not so ready in these operations, (and so might fall into some mistake. By which taking only the compasse of the timber, they may know the quantity of the length of a foot thereof.

A Table, which by the compass of any piece of round Timber shews the true measure of of one foot length thereof.

Inches of the Compasse.

C.	f.pts.	C.	f.pts.	C.	f.pts.
10	0.055	40	0.537	70	2.707
11	0.066	41	0.929	71	2.705
12	0.079	42	0.974	72	2.864
13	0.093	43	1.021	73	2.945
14	0.108	44	1.070	74	3.026
15	0.124	45	1.119	75	3.108
16	0.141	46	1.169	76	3.191
17	0.159	47	1.220	77	3.276
18	0 179	48	1.273	78	3.362
19	0.200	49	1.327	79	3.449
20	0.221	50	1.381	80	3.537
21	0.243	51	1.437	82	3.625
22	0.267	52	1.436	83	3.715
23	0.292	53	1.552	84	3.807
24	0.318	54	1.612	85	3.866
25	0.343	55	1.671	86	3.990
26	0. 74	56	1.732	87	4.084
27	0.403	57	1.795	88	4.183
28	0 433	58	1.860	89	4.279
29	0.465	59	1.923	90	4.377
30	0.497	60	1.988	91	4.475
31	0.531	61	2.056	92	4.576
32	0.566	62	2.124	93	4.677
33	0.602	63	2.193	94	4 780
34	0.639	64	2.264	95	4.882
35	0.677	65	2 335	96	4.987
36	0.716	66	2.407	95	5.093
37	0.756	67	2.480	98	5.200
38	0.798	68	2.555	99	5.307
39	0.840	69	2.631	100	5 526

The Demonſtration of this Table.

THe uſe of this Table is plain and ready; for having the compaſſe of the Timber in inches, finde it out in this Table, and ſo you ſhall there finde the true quantity of one foot length thereof, which if you multiply by the number of feet, which the timber hath in length, it ſhewes the true content thereof.

Thus a piece of timber 48 inches in compaſſe, and 20 foot long is 25 feet, 460 parts.

For 48 *Inches in compaſſe gives*	1.273
Which multiplied by 20	20
Yields	25.460

Which is 25 foot, and almoſt an half; whereas reckoning 12 Inches, which is the quarter of the Compaſs, to be the ſquare, it would yield but 20 feet, and ſo there would be five feet and almoſt an half loſt in this piece of timber.

This

This Table may be also drawn into a line or two upon a Ruler, but I want time to shew how, therefore I shall leave it to the Artist himself, who shall have most occasion for it.

To measure Tapering Timber.

TApering timber (according as the base thereof is either round, or right lined) is either a Cone, or a Pyramide, or a segment of one of these.

If it be a compleat Cone or Pyramide having but one base, and ending in a sharp point, then you must multiply the Area of the base by a third part of the height.

Thus, suppose the four square Pyramide A B C to be 45 foot long and 18 Inches square at the base: You shall finde by the Table of timber measure *(Pag.136.)* that 18 Inches square yield for the content of one foot length 2 feet, 250 parts: this multiplyed by 45 foot, which is one third of the length thereof, makes 33 feet, 750 parts.

Thus

Thus the whole Pyramide is easily measured.

But now suppose there were onely a part thereof to be measured, *viz.* DKBC, being 30 foot long from D to B, being six Inches square at D, and 18 Inches square at B, as before.

The common way used herein is to finde out the square in the very midst thereof, and to work by that, as if it were the true square, but this way, though it be true in Flats, as Boards, or Land, yet here it yields alwayes somewhat less.

For, according to this Rule, the square in the midst at F is 12 Inches, and so the piece of timber should be 30 foot in quantity. But this is not the truth.

For

For proof hereof these two parts of the Pyramyde A D and D B must, as you saw before, make up 33 feet, 750 parts.

But the top of the Pyramide A D, measured by the true rule, makes but 1 foot, 250 parts. For the base thereof D K being six Inches square.

The solid content of one foot is	0.250
which multiplyed by a third of the length 5 feet	5.000
Yields	1.250

Now this 1 foot, 250 parts added to the 30 feet, which was thought to be the measure of the lower part D B, makes but 31 feet, 250 parts, whereas you see it should be 33 feet, 750 parts. So that here is lost 2 feet, and an half of timber by this way of measuring.

And this way of *Ramus*, to measure both the parts of the Pyramis, and then to substract one from the other, seems to me more plain and easie then that prescribed by Master *Oughtred* and Master *Wingate*, for the measuring of such tapering-timber. But you may say how shall we finde the length of that part of the Pyramis which is wantling.

I answer: Observe the difference between the two ends, which in this example is 12 Inches, and this proportion will hold well enough in such kinde of Pyramides.

As the difference of the two ends	12 *inches.*
To the length between them	30 *feet.*
So the greater base	18 *inches.*
To the whole length	45 *feet.*
And thus the whole Pyramis being found, as before to be	33 *feet,* 750 *parts.*
And the top thereof to be substracted	1 *foot,* 250 *parts.*
There remains for the other part	32 *feet* 500 *parts.*

And this is the true quantity of the said tapering piece of timber.

If this way seem too troublesome to the common sort of measurers, they may then measure such pieces of timber, as if they were two or three several pieces; and thus measuring in the midst of every ten feet length, they will find the work very easie by these tables, and much more exact then their common way at once measuring.

Thus, this piece of timber being 30 foot long.

The square thereof at G, which is in the midst of the first 10 feet is 16 inches to which

which there anſwers in the table of timber-meaſure 1 778; which multiplied by 10, by adding a cipher, and ſetting the (.) a figure forwarder, makes

		F. parts
		17.780
The like at F *for the next* 10 *feet, being* 12 *inches ſquare*	*is*	10.000
The like at E *for the laſt* 10 *feet, being* 8 *inches ſquare*		4.440
The ſum of all three is		32.220
which lacks onely		00.280
Of the true content		32.500

As I have ſhewed you how to do with this ſquare tapering-timber, ſo you may do by the round tapering-timber, working by the table of round timber (*P.* 129.) Alſo you may ſee how to meaſure any other many-ſided Pyramis. But I have been already too long in theſe things: onely the uſefulneſs hereof (all timber being almoſt of this faſhion) and the errours of many herein, and the little which hath been written hereof by others hath made me the more large.

Note, if any of the numbers of theſe Tables be too little for your occaſion, you may work by the half thereof.

Thus

Thus, ſuppoſe a piece of Timber or Stone to be 48 inches ſquare. This Table 134 reacheth but to 36 inches ſquare; therefore take the half of your number, which will be 24; and this in the Table gives you 2 feet 000 parts; and this is the quantitie of one quarter of a foot length thereof; ſo that if you multiply it by 4, it makes 16 feet, which is the content of one foot length of piece of timber: and ſo work, as before.

Of Gauging.

THere is not much difference (in the thing it ſelf) from meaſuring of other ſolids; onely they are meaſured by feet and inches; theſe by gallons, quarts and pintes, or the parts thereof.

There are two things herein chiefly neceſſary, yet both much controverted.

Firſt theſe Veſſels being all of irregular formes, how to reduce them to a regular proportion.

Secondly, to finde the true quantity of the Gallon in cubick inches or parts of a foot.

For

For the first of these, these, the best way is this, according to Mr. *Oughtred*.

Measure he Diameter of the vessel both at the bung, and at the head thereof; and by the Diameters finde out the Area of the circles. Then take two thirds of the Area of the Circle at the bung, and one third of the Area of the Circle of the head, and adde them together: and lastly, multiply the sum thereof by the length of the Vessel.

For the second thing, the content of our English Gallon, which is the measure of all these vessels, This is most commonly received, that a Wine-gallon conteins 231 cubick inches: yet Dr. *Wybard* pleads very strongly, that it is somewhat lesse, making the Wine gallon to be 224 inches, or 225 at most. But the difference being so small, the errour will not be much; and therefore, till the exact truth be more certainly known, I shall, with the most, follow the first; counting it better to allow rather a little over-measure, then any thing under.

Thus for example, suppose a vessel, whose Diameter at the Bung is 32 Inches, and at the head 18 Inches, and the length 40 Inches,

Two

Two thirds of the Circle at the bung are	536,166
One third of the circle at the head is	84,823
The summe of these 2	620.789
which multiplyed by the length 40 Inches	40
The summe is	24839,560

This is the solid content of the vessel.

Now there being 231 cubick Inches in a wine Gallon, if you divide this 24839,560 by 231 you shall find 107,530.

So that there are 107 Gallons, and 530 parts, which is a little above halfe a Gallon in the said vessel

According to these rules and observations I have Calculated this Table, without which it would be very troublesome to find this out at length; *viz.* first the Area of the Circles, and then the content of the Vessel in cubick inches; and lastly to reduce this into Gallons: therefore this Table shews you one third and two thirds of the Area of any circle ready cast up in the parts of a Gallon for any Diameter to 60 inches whereby so much of the labour will be saved.

If you desire a more particular account of the manner of calculating this Table; it is grounded upon these Theoremes.

First,

First, As 1, *to* 0,7854;
So the square of the Diameter, 1 *inch*
To the content of the circle. 0,7854
Secondly, *As* 231, *the square inches in one Wine gallon,*
So 1 *gallon, or parts* 1,0:0
So the said content of the circle, 0,7854
So the parts of a gallon 0,0034

So that the Area of a Circle having one inch for its Diameter, is the 0,0034 part of a gallon.

Now a third part of this number is 0,001133. This number therefore 1133 being multiplied by the square of any Circles diameter taken by inch-measure, gives the third part of the content thereof in Wine-measure, which is the parts to be taken of the circle at the head of the Cask. And this same number doubled is two thirds of the like circle, being the Parts to be taken at the bung of the Cask. Thus much for the making of the Table; which you may increase as you please to any parts of an inch.

A Table for the Gauging of wine-vessels

Inches of the Diameter.

D	Head G.pts	Bung G.pts	D	Head G.pts	Bung G.pts
01	0.001	0.002	31	1.089	2.178
02	0.004	0.009	32	1.160	2.321
03	0.010	0.020	33	1.234	2.468
04	0.018	0.036	34	1.310	2.620
05	0.028	0.056	35	1.388	2.776
06	0.041	0.081	36	1.469	2.938
07	0.056	0.111	37	1.551	3.102
08	0.072	0.145	38	1.636	3.272
09	0.092	0.183	39	1.724	3.448
10	0.113	0.226	40	1.813	3.625
11	0.137	0.274	41	1.904	3.809
12	0.163	0.326	42	2.000	4.000
13	0.192	0.383	43	2.096	4.191
14	0.222	0.444	44	2.194	4.388
15	0.255	0.510	45	2.295	4.588
16	0.290	0.580	46	2.398	4.796
17	0.328	0.557	47	2.504	5.007
18	0.367	0.734	48	2.611	5.222
19	0.409	0.818	49	2.721	5.442
20	0.453	0.906	50	2.833	5.665
21	0.500	1.000	51	2.948	5.895
22	0.548	1.097	52	3.065	6.129
23	0.600	1.199	53	3.184	6.367
24	0.653	1.305	54	3.305	6.609
25	0.708	1.416	55	3.428	6.856
26	0.766	1.532	56	3.554	7.108
27	0.826	1.652	57	3.682	7.364
28	0.888	1.777	58	3.813	7.625
29	0.953	1.906	59	3.945	7.890
30	1.020	2.040	60	4.080	8.160

The

The use of this Table is thus.

To finde the content of any Vessel in wine-measure.

First, measure the Diameter at the Head, and finde the number in the Table belonging to it. Then measure the Diameter of the bung, and finde the number belonging to that. Then adde these two together, and multiply the sum thereof by the Inches of the Vessels length, measured in the inside of the Vessel from head to head.

Thus; according to Master *Oughtreds* example in the Circles of proportion: suppose a Vessel having the Diameter at the Head 18 Inches, the Diameter at the Bung 32 inches, and the length thereof 40 inches; the content thereof is thus found.

The Table shewes	G. parts
For 18 inches at the Head	0,367
For 32 Inches at the Bung	2.321
These two added together, make	2,688
which multiplied by the length, being 40 inches	40
Makes	107,520

According

According to his operation it ſhould be 107 gallons, 530 parts, which differences of no moment in theſe concluſions.

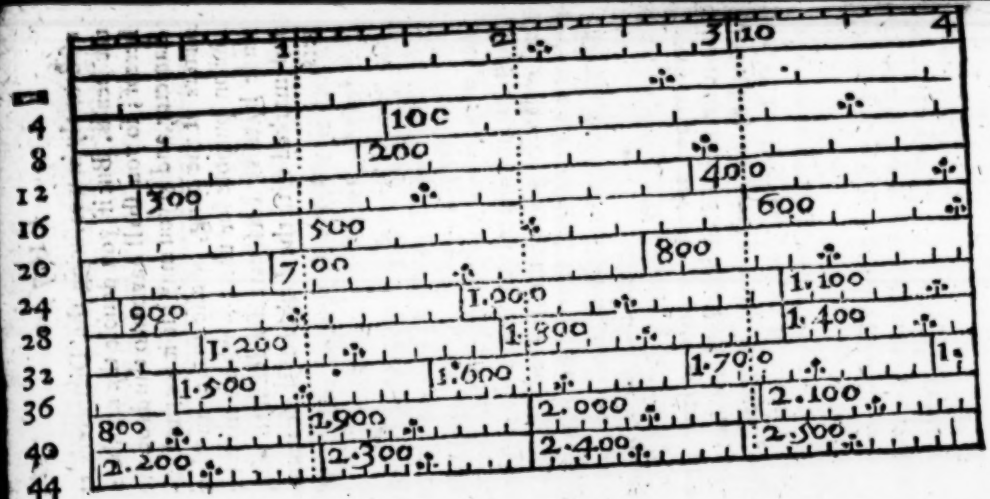
Of the Gauging-line.

NOw becauſe this Table is caſt up onely to whole Inches, though the proportional difference for any part of an Inch may be found eaſily thereby: yet ſince the number of theſe Inches muſt firſt be meaſured by ſome rod or ſother in the veſſel it ſelf; you may ſet this line ſo upon your rod, that without having reſpect to the Inch-meaſure, it will ſhew you the true Area of the Circle in Gallon-meaſure, by the depth of the Diameter.

This line, though the figure is but four Inches long, yet the twelve lines therein are ſuppoſed to be one continued line, being in all four feet, or 48 Inches long; which is as long as moſt veſſels require; but you may enlarge it as you pleaſe.

Note this line ſhews onely a third part of the Area of any Circle, whoſe Diameter is meaſured thereby; ſo it is properly to be uſed

uſed onely in meaſuring the Diameters at the heads. But if you double the numbers hereof; ſo you ſhall have two thirds of the Diameter, and ſo you may uſe it for the Diameters at the bung, or elſe make another line on purpoſe for them, which may be made by this; each part divided into two, and marked with the double of theſe numbers.


1
2
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32
36
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44
100
200
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500
600
700
800
900
1.000
1.100
1.200
1.300
1.400
1.500
1.600
1.700
2.000
2.100
800
2.900
2.200
2.300
2.400
2.500

Now the use of this line is the same with the table, and is to be only instead of a larger table, shewing the parts of a Gallon, belonging to each inch. As you may see by the former example.

The Gauging line shews.	*G. parts*
For 18 inches at the head	0.367.
For 32 inches, which must be doubled, because at the bung,	1.160.
Yields, as before,	2.488
And multiplyed by the length	40
Yields, as before,	107.520

And thus working by this line, you may readily find these numbers to the 100 part of a Gallon, for each 100 part of an Inch, which is as exact I think as need be.

And thus this troublesome business is very easily performed, without any Equation of Diameters, or Reduction of measures, which with some confidence I dare present to the candid censure of the better learned, and to the practice of such as have use thereof.

How to make this Gauging-line, and to set it upon a Gauging Rod.

But though this operation by this line is performed easily, yet the making of this line, will at the first be some

trouble, unlesse you know how to finde out some certain equall numbers thereof, *viz.* every 5 or 10 parts; otherwise, you will never divide the line either readily or handsomely by the former Table.

Now to finde out these parts, you may remember that 11333, or more exactly, the third part of 34 was the number by which the Table was framed. So that,

As 34, *to* 3; *So* 1, *to* 88235294.

This number, or six of the first figures thereof, you must multiply by the parts you desire, and then extract the Square-root (as before in the line of Timber-measure) so you may find any part of this line as in this Table, and draw this Gauging-line very exactly thereby, having an Inch-line upon your Rule, divided into decimall parts.

Parts	*Squares*	*Roots*	*Inch-parts.*
1	882352.	939	0.939
10	8823529	2975	2.975
100	88235294	9393	9.393
1000	882352941	29704	29.704

A Table to divide the Gauging-line for wine-measure.

line	*In. pts.*	*line*	*In. pts.*	*line*	*In. pts.*
1	0,939	160	11,882	400	18,787
2	1,328	170	12,247	410	19,030
3	1,627	180	12,602	420	19,250
4	1,879	190	12,948	430	19,478
5	2,100	200	13,284	440	19,703
6	2,301	210	13,612	450	19,926
7	2,485	220	13,933	460	20,146
8	2,657	230	14,246	470	20,365
9	2,818	240	14,552	480	20,580
10	2,970	250	14,852	490	20,793
20	4,201	260	15,146	500	21,004
30	5,145	270	15,435	510	21,214
40	5,941	280	15,718	520	21,420
50	6,642	290	15,997	530	21,625
60	7,276	300	16,270	540	21,826
70	7,859	310	16,539	550	22,028
80	8,401	320	16,803	560	22,228
90	8,911	330	17,064	570	22,427
100	9,393	340	17,320	580	22,621
110	9,852	350	17,573	590	22,815
120	10,287	360	17,823	600	23,008
130	10,710	370	18,069	610	23,200
140	11,114	380	18,311	620	23,390
150	11,504	390	18,550	630	23,575

Parts of the Gauging-line, 1000 parts in one Gallon.

A Table to divide the Gauging-line for Wine-measure.

line	In. pts.	line	In. pts.	line	In. pts
640	23,763	880	27,865	2200	44,058
650	23,948	890	28,022	2300	45,049
660	24,132	900	28,180	2400	46,019
670	24,315	910	28,336	2500	46,966
680	24,495	920	28,491	2600	43,898
890	14,674	930	28,646	2700	48,809
700	24,852	940	28,800	2800	49,705
710	25,029	950	28,954	2900	50.585
720	25,205	960	29,105	3000	51,449
730	25,382	970	29,254	3100	52,300
740	25,553	980	29,407	3200	53,137
750	25,725	990	29,555	3300	93,961
760	25,895	1000	29,704	3400	54,777
770	26,066	1100	31,153	3500	55,572
780	26,234	1200	32,530	3600	56,360
790	26,401	1300	33,867	3700	57,137
800	26,569	1400	55,148	3800	57,905
810	26,734	1500	36,389	3900	58,661
820	26,898	1600	37,575	4000	59,409
830	27,062	1700	38,730		
840	27,225	1800	39,853		
850	27,383	1900	40,945		
760	27,548	1000	42,008		
870	27,704	2100	43,045		

Yet becauſe theſe Gauging lines are not ſo ready to be had, & many have Gauging lines already which are divided into inches, by which you may exactly meaſure the Diameters at the head and bung of the veſſel; I have encreaſed the former table, to ſhew the third part of the Area of any Circle in Gallon meaſure, to every tenth part of an inch, which will ſerve for the Diameters at the head; & then for the Diameters at the bung, you muſt double the numbers in this Table, and ſo worke as before.

The Table is ſo plain it needs no explaining, only take notice that you muſt finde the whole inches in the ſides of the Table, and the parts of inches at the head of the Table, and in the ſquare meeting of theſe two you ſhall find the gallons and parts which you muſt uſe as before in the other Table.

A Table of Gauging for Wine Vessels.

Parts of an Inch.

Inches	0	1	2	3	4
	Gpts	Gpts	Gpts	Gpts	Gpts
1	0.001	0.001	0.002	0.002	0.002
2	0.004	0.005	0.006	0.006	0.007
3	.010	0.011	.012	.012	.013
4	.018	.019	.020	.021	.022
5	.028	.029	.030	.032	.033
6	.041	.042	.044	.045	.046
7	.056	.057	.059	.060	.062
8	.072	.074	.076	.078	.080
9	.092	.094	.096	.098	.100
10	.113	.116	.118	.120	.122
11	.137	.140	.141	.145	.147
12	.163	.166	.169	.171	.174
13	.192	.195	.197	.200	.203
14	.222	.225	.229	.232	.235
15	.255	.258	.262	0.265	.269
16	.290	.294	0.297	0.301	.305
17	.328	.331	0.335	.339	.343
18	.367	0.371	.375	.379	.384
19	.409	0.413	.418	.422	.426
20	.453	.458	.462	.467	.472
21	.500	.505	.509	.514	.519
22	.549	.554	.559	.564	.569
23	.600	.605	.670	.615	.620
24	.653	.658	.664	.669	.675
25	.708	.714	.720	.725	.731
26	.766	.772	.778	.784	.790
27	0.826	.832	.838	.845	.851
28	.888	.895	.901	.908	.914
29	.953	0.960	.966	0.973	.980
30	1.020	1.027	1.034	1.041	1.074

A Table of Gauging of Wine Vessels.

Parts of an Inch.

Inches	5	6	7	8	9
	G.pts	Gpts	G.pts	G.pts	Gpts
1	0.003	0.003	0.003	0.004	0.004
2	0.007	0.008	0.008	0.009	0.009
3	0.014	0.015	0.016	0.016	0.017
4	0.023	0.024	0.025	0.026	0.027
5	0.034	0.036	0.037	0.038	0.039
6	0.048	0.049	0.051	0.052	0.054
7	0.064	0.065	0.067	0.069	0.071
8	0.082	0.084	0.086	0.088	0.090
9	0.102	0.104	0.107	0.109	0.111
10	0.125	0.127	0.130	0.132	0.135
11	0.150	0.152	0.155	0.158	0.160
12	0.177	0.180	0.183	0.186	0.189
13	0.207	0.210	0.213	0.216	0.219
14	0.238	0.242	0.245	0.248	0.252
15	0.272	0.276	0.279	0.283	0.287
16	0.308	0.312	0.316	0.320	0.324
17	0.347	0.351	0.355	0.359	0.363
18	0.388	0.392	0.396	0.400	0.405
19	0.431	0.435	0.440	0.444	0.449
20	0.476	0.481	0.486	0.490	0.495
21	0.524	0.529	0.534	0.539	0.544
22	0.574	0.579	0.584	0.589	0.594
23	0.626	0.631	0.636	0.642	0.647
24	0.680	0.686	0.691	0.597	0.703
25	0.737	0.743	0.749	0.754	0.760
26	0.796	0.802	0.808	0.814	0.820
27	0.857	0.863	0.870	0.876	0.882
28	0.920	0.927	0.934	0.940	0.947
29	0.986	0.993	1.000	1.006	1.013
30	1.054	1.061	1.068	1.075	1.082

A Table of Gauging for wine Vessels.

Parts of inches.

Inches	0	1	2	3	4
	Gpts	Gpts	Gpts	Gpts	Gpts
31	1.089	1.096	1.103	1.110	1.117
32	1.160	1.168	1.175	1.182	1.190
33	1.234	1.242	1.249	1.257	1.264
34	1.310	1.318	1.325	1.333	1.341
35	1.388	1.396	1.404	1.412	1.420
36	1.469	1.477	1.485	1.493	1.501
37	1.552	1.560	1.568	1.577	1.585
38	1.636	1.645	1.654	1.662	1.671
39	1.724	1.733	1.741	1.750	1.759
40	1.813	1.822	1.831	1.841	1.850
41	1.905	1.914	1.924	1.933	1.942
42	2.000	2.009	2.018	2.028	2.037
43	2.096	2.105	2.115	2.125	2.135
44	2.194	2.204	2.214	2.224	2.234
45	2.295	2.305	2.316	2.326	2.336
46	2.398	2.408	2.419	2.429	2.440
47	2.504	2.514	2.525	2.536	2.547
48	2.611	2.622	2.633	2.644	2.655
49	2.721	2.732	2.744	2.755	2.766
50	2.833	2.845	2.856	2.868	2.879
51	2.948	2.959	2.971	2.983	2.994
52	3.065	3.076	3.088	3.100	3.112
53	3.284	3.196	3.208	3.220	3.232
54	3.305	3.317	3.330	3.342	3.354
55	3.428	3.441	3.453	3.466	3.479
56	3.554	3.567	3.580	3.593	3.605
57	3.682	3.695	3.708	3.721	3.734
58	3.813	3826	3.839	3.852	3.866
59	3.945	3.959	3.972	3.986	3.999
60	4.080	4.094	4.107	4.121	4.135

A Table of Gauging for Wine Vessels.

Parts of Inches.

Inches	5 G.pts	6 Gpts	7 G.pts	8 G.pts	9 Gpts
31	1.125	1.132	1.139	1.146	1.153
32	1.197	1.204	1.212	1.219	1.227
33	1.272	1.279	1.287	1.295	1.302
34	1.349	1.357	1.365	1.373	1.380
35	2.428	1.436	1.444	1.452	1.461
36	1.510	1.518	1.526	1.535	1.443
37	1.594	1.602	1.519	1.619	1.628
38	1.680	1.689	1.697	1.706	1.715
39	1.768	1.777	1.786	1.795	1.804
40	1.859	1.868	1.877	1.886	1.896
41	1.952	1.961	1.971	1.980	1.990
42	2.047	2. 57	2.066	2.076	2.086
43	2.145	2.154	2.164	2.174	2.184
44	2.244	2.254	2.264	2.275	2.285
45	2.346	2.356	2.367	2.377	2.388
46	2.450	2.461	2.472	2.482	2.493
47	2.557	2.568	2.579	2.589	2.600
48	2.666	2.677	2.688	2.699	2.710
49	2.777	2.788	2.800	2.811	2.822
50	2.890	2.902	2.913	2.925	2.936
51	3.006	3.018	3.030	3.041	2.053
52	3.124	3.136	3.148	3.160	3.172
53	3.244	3.256	3.268	3.281	3.293
54	3.367	3.379	3.391	3.404	3.416
55	3.491	3.504	3.516	3.529	3.452
56	3.618	3.631	3.644	3.657	3.669
57	3.747	3.760	3.773	3.786	3.800
58	3.879	3.892	3.905	3.919	3.932
59	4.013	4.026	4.040	4.153	4.067
60	4.149	4.162	4.176	4.190	4.203

Of the measuring of Ale or Beer-Vessels.

TO measure Ale or Beer-Vessels your best way will be to make the like Tables and Line as for Wine-measure; and so the practice will be all one.

But first you must know the true content of the Ale-gallon, concerning which there are divers reports and accounts. Some ancient Artists, *viz.* Mr. *Goodwin*, and Mr. *Reynolds* affirme, that the proportion between the Ale-gallon and Wine-gallon is as 4 to 5; the Wine-gallon being 231 inches, and the Ale-gallon 288 $\frac{3}{4}$. This, by Mr *Oughtred* is much lessened, being supposed by him to be but 272 inches, and $\frac{1}{4}$ and Dr. *Wybard* lessens it somewhat more, making it at the most but 270 inches. But so far as I can learn, there are three sorts of measures in use. The measure for Wine being 231 inches; the measure for dry things, as Corn, &c. being about 272; and the measure for Beer and Ale being 288 inches and $\frac{3}{4}$.

The

The proportion between these three Gallons is 28,35,31; but having little to do with the middle Gallon, I shall take the Ale Gallon to be 282 inches and three quarters, and conclude the proportion between the Wine and Ale Gallon to be exactly as 4 to 5.

Now therefore if you have much occasion to gauge Beer-vessels for your ready use, you may thus make the like Tables and Line as you did for Wine-measure:

As 288 three quarters, the inches in one Ale-gallon,	
To the parts of a Gallon	1,00000
So the content of the Circle, having one inch Diameter	0,7854
To the like parts of a Gallon.	0,00272

Now a third part of this being 90 two thirds, or 90.666 multiplied by the square of the diameter of any Circle taken in Inch-measure, gives a third part of the content thereof, which is the measure to be used for the head of the Vessel; and this doubled, shews the number to be used for two thirds of the Diameter at the Bunge; and thus you may make a table for Beer-measure to as many inches and parts of inches as you please.

As

As you may see in this following table of Beer-measure; which you must use as before for Wine-measure.

For Example, the *London* Coopers scantlings for a Beer Barrel is thus.

The Diameter at the head 19 *Inches* 9 *parts.*
The Diameter at the Bung, 23 *Inches* 0 *parts.*
The length is 27 *Inches* 4 *parts.*

Now to finde out the content of this vessel by this table.

	G.	parts.
For the Table will shew		
For the 19 *Inches* 9 *parts at the head*	0	359
For the 23 *Inches at the bung*	0	480
which must be doubled or repeated	0	480
The Sum	1	319
This multiplied by the length	27	*In.* 4 *part*
	36.	365. 140

Yields 36 Gallons, and 140 parts over. Which is a little above a pint. By which it appears that the Beer Barrel agrees well enough with this rule, and may be a confirmation of the truth of the foresaid proportion between the Wine Gallon and the Beer Gallon, *viz.* as 4 to five.

The

The like you shall finde in the scantling for the Kilderkin

			G.	parts.
Diam. at head	16 *Inches*	1 *part,*	0	235
At Bung	18	6	0	314
The same again			0	314
	The Sum			863
Multiplyed by the length			21	*I. pts.*

Yields 18 Gallons, and 209 parts over being, about a pint and an half too much.

Thus you see these Rules agree very well with the Coopers & Brewers, who are most concern'd therein, and would not willingly allow so much over measure, as the other rules intimate, but would rather, if they had any truth, be ready to follow them for their own advantage.

A Table for the Ganging

Parts of an Inch.

Inches	0	1	2	3	4
	G.pts	G.pts	G.pts	G.pts	G.pts
1	0.001	0.001	0.002	0.002	0.002
2	0.004	0.004	0.004	0.005	0.005
3	0.008	0.009	0.009	0.010	0.010
4	0.014	0.015	0.016	0.017	0.017
5	0.023	0.024	0.024	0.025	0.026
6	0.033	0.034	0.035	0.036	0.037
7	0.044	0.046	0.047	0.048	0.050
8	0.058	0.059	0.064	0.062	0.064
9	0.073	0.075	0.077	0.078	0.080
10	0.091	0.092	0.094	0.096	0.098
11	0.110	0.112	0.114	0.116	0.118
12	0.130	0.133	0.135	0.137	0.139
13	0.154	0.156	0.158	0.160	0.163
14	0.178	0.180	0.183	0.185	0.188
15	0.204	0.207	0.209	0.212	0.215
16	0.232	0.235	0.238	0.241	0.244
17	0.262	0.265	0.269	0.271	0.274
18	0.294	0.297	0.300	0.304	0.307
19	0.327	0.330	0.334	0.338	0.341
20	0.363	0.366	0.370	0.174	0.377
21	0.400	0.404	0.407	0.411	0.415
22	0.439	0.443	0.447	0.451	0.455
23	0.480	0.484	0.488	0.492	0.496
24	0.522	0.527	0.531	0.535	0.540
25	0.567	0.571	0.576	0.580	0.585
26	0.613	0.618	0.622	0.627	0.632
27	0.661	0.666	0.671	0.677	0.681
28	0.711	0.716	0.721	0.726	0.731
29	0.762	0.768	0.773	0.778	0.784
30	0.816	0.821	0.827	0.832	0.838

of Beer or Ale Veſſels.

Parts of an Inch.

Inches	5 Gpts	6 Gpts	7 Gpts	8 Gpts	9 Gpts
1	0.003	0.003	0.001	0.003	0.004
2	0.006	0.006	0.007	0.007	0.008
3	.011	.012	0.012	013	014
4	.018	.019	020	021	022
5	.027	.028	029	030	032
6	.038	.039	041	042	043
7	.051	.052	054	055	057
8	.065	.067	069	070	072
9	.082	.084	085	087	089
10	.100	.102	104	106	108
11	.120	.122	124	126	128
12	.142	.144	146	148	151
13	0.165	.168	170	173	175
14	.191	.193	196	199	201
15	.218	.221	223	226	229
16	.247	.250	253	256	259
17	.278	.281	284	287	290
18	.310	0.314	0.317	0.320	0.324
19	.345	.348	0.352	0.355	0.359
20	.381	.385	388	392	396
21	.419	.423	427	431	435
22	.459	.464	467	471	475
23	.500	.505	509	514	518
24	.544	.549	553	558	262
25	.589	.594	599	603	608
26	.637	.641	646	651	656
27	.686	.691	696	701	706
28	.736	.742	747	752	757
29	0.789	.794	800	805	811
30	0.843	0.849	854	0.860	0.866

A Table for the Gauging

Parts of Inches.

Inches	0	1	2	3	4
	G.pts	G.pts	G.pts	G.pts	G.pts
31	0.871	0.877	0.883	0.888	0.894
32	0.928	0.934	0.940	0.946	0.952
33	0.987	0.993	0.999	1.005	1.011
34	1.048	1.054	1.061	0.067	1.073
35	1.111	1.117	1.123	1.130	1.136
36	1.175	1.181	1.188	1.195	1.201
37	1.241	1.248	1.255	1.261	1.268
38	1.309	1.316	1.323	1.330	1.327
39	1.379	1.386	1.399	1.400	1.407
40	1.449	1.457	1.465	1.472	1.480
41	1.524	1.532	1.539	1.547	1.554
42	1.599	1.607	1.615	1.612	1.630
43	1.676	1.684	1.692	1.700	1.708
44	1.755	1.763	1.771	1.779	1.787
45	1.836	1.844	1.852	1.861	1.869
46	1.919	1.927	1.935	1.944	1.952
47	2.003	2.011	2.020	2.029	2.037
48	2.089	2.098	2.106	2.115	2.124
49	2.177	2.186	2.194	2.203	2.212
50	2.266	2.275	2.285	2.294	2.303
51	2.358	2.367	2.377	2.386	2.395
52	2.451	2.461	2.470	2.480	2.487
53	2.546	2.556	2.566	2.576	2.587
54	2.644	2.654	2.663	2.673	2.683
55	2.742	2.752	2.762	2.772	2.782
56	2.842	2.852	2.863	2.873	2.884
57	2.946	2.956	2.966	2.977	2.987
58	3.050	3.060	3.071	3.081	3.092
59	3.156	3.166	3.177	3.188	3.199
60	3.264	3.274	3.285	3.296	3.307

Inches	Parts of Inches. 5	6	7	8	9
	G.pts	G.pts	G.pts	G.pts	G.pts
31	0.900	0.905	0.911	0.917	0.923
32	0.968	0.964	0.969	0.975	0.981
33	1.017	1.024	1.030	0.036	1.042
34	1.079	1.084	1.092	1.098	1.104
35	1.143	1.149	1.155	1.162	1.168
36	1.208	1.215	1.221	1.228	1.234
37	1.275	1.282	1.288	1.295	1.302
38	1.344	1.351	1.358	1.365	1.372
39	1.415	1.422	1.429	1.436	1.443
40	1.487	1.494	1.502	1.509	1.517
41	1.561	1.569	1.577	1.584	1.592
42	1.638	1.645	1.653	1.661	1.669
43	1.716	1.724	1.731	1.739	1.747
44	1.795	1.803	1.812	1.820	1.828
45	1.877	1.885	1.893	1.902	1.910
46	1.960	1.969	1.977	1.986	1.994
47	2.046	2.054	2.062	2.071	2.080
48	2.133	2.142	2.150	2.159	2.168
49	2.221	2.230	2.239	2.248	2.257
50	2.312	2.322	2.330	2.340	2.349
51	2.405	2.414	2.423	2.433	2.442
52	2.499	2.509	2.518	2.527	2.537
53	2.595	2.605	2.614	2.624	2.634
54	2.693	2.703	2.713	2.723	2.732
55	2.792	2.802	2.813	2.823	2.833
56	2.894	2.904	2.914	2.925	2.935
57	2.998	3.008	3.018	2.028	3.039
58	3.102	3.113	3.124	3.134	3.145
59	3.210	3.221	3.231	3.242	3.253
60	3.318	3.329	3.340	3.351	3.362

If you would draw this table into a line, to ſet upon a Gauging Rod, as you did before for the Wine meaſure, you muſt worke after the like proportion, altering the number, which muſt be 272, as was found before.

As 272. *to* 3 : *So* 1. *to* 11029 411765

This number or the 7 firſt figures thereof multiplyed by the parts of your line, the ſquare root extracted from that product, will give you the length of the Gauge-line in Inches and parts.

Parts	*Squares*	*Roots*	*Inches Parts.*
1	11029411	10501	1,050
10	110294111	.33211	3,321
100	1102941117	.105021	10,502
1000	11029411176	.332101	33,210

But this being ſomwhat troubleſome, I have calculated this table to your hands, ſo that thereby dividing your Gauging rod into Inches, and decimal parts, you may eaſily ſet theſe lines upon your Rod, which being truly and handſomly ſet off will be more ready and exact for uſe then the tables can be, they giving but to the 10th part of an Inch, this viſibly ſhewing to the 100 part of an Inch.

A Table to divide a Gauging Rod for Beer-measure.

Parts of the Gauging Rod.

Rod.	In. par	Rod	In. pts.	Rod	In. pts.
1	1,050	160	13,284	400	21,004
2	1,485	170	13,693	410	21,265
3	1,819	180	14,090	420	21,523
4	2,102	190	14,476	430	21,778
5	2,348	200	14,852	440	22,029
6	2,572	210	15,219	450	22,278
7	2,779	220	15,579	460	25,524
8	2,972	230	15,927	470	22,768
9	3,151	240	16,270	480	23,009
10	3,321	250	16,605	490	23,247
20	4,696	260	16,934	500	23,483
30	5,752	270	17,257	510	23,717
40	6,642	280	17,573	520	23,948
50	7,426	290	17,885	330	24,178
60	8,135	300	18,190	540	24,405
70	8,787	310	18,491	550	24,630
80	9,393	320	18,787	560	24,852
90	9,963	330	19,078	570	25,072
100	10,502	340	19,365	580	25,291
110	11,015	350	19,647	590	25,509
120	11,504	360	19,926	600	25,724
130	11,974	370	20,201	610	25,938
140	12,426	380	20,472	620	26,150
150	12,862	390	20,740	630	26,360

A Table to divide a Gauging Rod for Beer or Ale-measure.

Rod	In. pts.	Rod	In. pts.	Rod	In. pts
640	26,568	880	31,154	2200	49,259
650	26,775	890	31,330	2300	50,366
660	26,980	900	31,506	2400	51,450
670	27,184	910	31,680	2500	52,510
680	27,386	920	31,854	2600	53,550
690	27,587	930	32,027	2700	54,571
700	27,786	940	32,199	2800	55,572
710	27,984	950	32,370	2900	56,556
720	28,180	960	32,540	3000	57,523
730	28,375	970	32,709	3100	58,473
740	28,569	980	32,877	3200	59,409
750	28,761	990	33,044	3300	60,330
760	28,952	1000	33,210	3400	61,237
770	29,142	1100	34,831	3500	62,131
780	29,331	1200	36,380	3600	63,013
790	29,519	1300	37,866	3700	63,882
800	29,705	1400	39,295	3800	64,739
810	29,890	1500	40,675	3900	65,586
820	30,073	1600	42,009	4000	66,421
830	30,256	1700	43,301	4100	67,246
840	30,438	1800	44,556	4200	68,062
850	30,619	1900	45,778	4300	68,867
860	30,799	2000	46,967	4400	69,663
870	30,977	2100	48,126	4500	70,450

To conclude, this buſineſs of Gauging, ke notice that you muſt be very careful in eaſuring the Diameters at the head and ng: for they being to be multiplied by the ngth of the veſſel, a ſmall errour in them, ay encreaſe to much in the content. But e theſe diameters may be more eaſily eaſured then the true length of the veſſel tween the heads, in regard the thickneſs the heads may deceive you. Herein there- re you had need be careful, for the mi- ake of a quarter of an Inch in a large veſ- l; may make you miſreckon a Gallon in e content. But how to do this, I hope, is ter known to the practitioners hereof, en I can declare by many words. And erefore having written what I think will more new and uſeful to them, I ſhall te end theſe Artificial Experiments, and ceed to ſome more common concluſions, ich may be of more general uſe to all en.

of

Of Weights.

THere are two sorts of Weights used by us in *England*, the one is called Troy weight, the other is called Avoir-du-poiz, or over-weight. Troy-weight is thus ordered by the Statute, but yet the Standard weights are the surest trial of them.

24 grains of wheat make a Peny weight,
20 Peny weights make an Ounce,
12 Ounces make a Pound.

So there is 480 grains in the Ounce, and 5760 grains in the pound.

By this weight Silver and Gold are constantly weighed, and the Assise of Bread is set down in the Statutes according to this weight.

Also the Apothecaries either do, or should use this weight, only they divide the Ounce into other parts and denominations, *viz.*

20 Grains make a Scruple,	20 gr.	
3 Scruples make a Drachme,	60 g.	
8 Drachmes make an Ounce,	480 g.	
12 Ounces make a Pound.	5760 g.	

So that in this Ounce there is also 480 Grains, and therefore it must needs be the same with the Troy Ounce, though many Au-

Authours mistake this Ounce for the Avoir-du-poiz Ounce, which should have been more heedful therein.

Among the rest Mr. *John Penkethman* in his Book of the Assise of Bread reckons, the parts of the Avoir-du-poiz weight thus, 20 Grains make a Scruple, 3 Scruples a Dram, 8 Drams an Ounce, 16 Ounces a Pound. This mistake of his, and the like of others, led me into the like in my former Editions. But the best is that he calculates his tables, upon a better observation, making 73 Ounces Troy, to be equal in weight with 80 Ounces Avoir-du-poiz.

And if you go to work by this observation, and the *Reverse* or *Back-rule* of *Proportion*, you shall finde.

As 73 *to* 80 : *So* 480 *to* 438.

So that if the Troy Ounce have 480 grains, the Avoir-du-poiz Ounce must have but 438 Grains.

And this is the ordinary received Proportion between the Troy-weight and the Avoir-du-poiz, *viz.* 60 pounds Avoir-du-poiz; are equal to 73 pounds Troy. And that 73 Ounces Troy, are equal to 80 Ounces Avoir-du-poiz. From which proportion Doctor *Wybard*'s Experiment differs a litle, making 14 li. Avoir-du-poiz to be equal to 17 li. Troy weight; And 51 Ounces Troy,

proportionably

Troy ounc. 36. halfv.			to 40. ounc.
18. quart.			20. Avoir
9. half q.	} are		10. du-poiz
4. half 1.			5
16.			

to be equal to 56 Ounces Avoir-du-poiz. So that the Ounce Troy is greater then the Ounce Avoir-du-poiz, but the Troy pound is lesser then the pound Avoir-du-poiz.

But now for the parts and denomination of the Avoir-du-poiz weight, we must finde out some other rule, and I observe it is the nature of this weight, to take the whole great weight which is either the Hundred, Pound, or Ounce, (for the first foundation) and so to go downward, lessening still by half.

Thus the first great weight
being 112 pounds is called the Hundred
56 pounds is called the half hundred,
28 pounds is the quarter of the hundred
14 pounds is half a quarter

The half of this being

7 pounds
4 pounds
2 pounds
1 *li.* is called one pound
half a li. is half a pound
one quarter of a li. is a quarter
one eighth of a li. is half a quarter
one sixteenth is called an ounce
half an ounce
a quarter of an ounce
one eighth of an ounce is half a quarter
one sixteenth of an ounce is called a

(Dram

So that there is 16 Drams in an Ounce, and 16 Ounces in the pound. And with these weights, you may weight any thing from 1 ℔ weight to a Dram, which you cannot well do with fewer.

There are some other denominations of these weights in several places, as Stones, Cloves, Toddes, Rooves, Weights, Loads, Fothers, Tuns, but they are all reduced into these weights, and regulated thereby.

According to these Observations, I have corrected these tables of the Assize of Bread.

A Table of the Assize of Bread by Avoir-du-poiz weight.

16 ounces in the li.	Weight of a peny loafe.						16 drams in an ounce	
	white		Wheaten		Houshold		The price of the bushell of wheat for Forreigners.	
lb.	d.	oz.	d.	oz.	d.	oz.	lb.	d.
1	0	16 13	25	04	33	11	2	3 6
1	2	15 07	25	03	30	14	2	3 6
2	2	14 04	21	06	28	08	2	3 6
2	3	13 03	19	13	26	07	3	3 6
3	3	12 05	18	08	24	11	3	3 6
3	4	11 09	17	06	23	03	3	3 6
4	4	10 14	16	09	21	13	3	3 6
4	5	10 05	15	07	20	02	4	3 6
5	5	9 12	14	10	19	08	4	3 6
5	6	9 04	13	14	18	08	4	3 6
5	6	8 13	13	04	17	10	4	3 6
6	6	8 07	12	10	16	14	5	3 6
6	7	8 01	12	01	16	02	5	3 6
6	7	7 11	11	09	15	07	5	3 6
7	7	7 06	11	02	14	13	5	3 6
7	8	7 02	10	11	14	04	6	3 6
8	8	6 14	10	04	13	11	6	3 6
8	9	6 10	9	15	13	04	6	3 6
9	9	6 06	9	09	12	12	6	3 6
9	10	6 03	9	04	12	06	7	3 6
10	10	5 15	8	15	11	15	7	3 6
10	11	5 12	8	11	11	09	7	3 6
11	11	5 09	8	06	11	03	7	3 6
11	12	5 07	8	03	10	14	8	3 6
12	12	5 04	7	15	10	09	8	3 6
12	13	5 02	7	12	10	05	8	3 6
13	13	5 00	7	08	10	00	8	3 6
13	14	4 14	7	05	9	12	9	3 6
14	14	4 12	7	02	9	08	9	3 6
14	15	4 10	6	15	9	04	9	3 6
15	15	4 08	6	12	9	00	9	3 6
15	16	4 06	6	10	8	13	10	3 6

The price of the Bushell of wheat for Free-Town-Bakers.

A table of the Assize of Bread by Troy weigh

12 ounc. in one li.	Weight of a peny Loaf						20 peny-w. in ony oun
	White		Wheaten		Houshold		
lb.	d.	oz.	d.	oz.	d.	oz.	d.	lb.	d.
2	0	15	07	23	01	30	15	2	3
2	3	14	02	21	03	28	04	2	6
2	6	13	00	19	10	26	00	2	9
2	9	12	01	18	02	24	03	3	0
3	0	11	05	16	18	22	11	3	3
3	3	10	11	15	17	21	03	3	6
3	6	9	19	14	18	19	18	3	9
3	9	9	08	14	02	18	16	4	0
4	0	8	18	13	07	17	16	4	3
4	3	8	09	12	13	16	18	4	6
4	6	8	01	12	01	16	02	4	9
4	9	7	13	11	12	15	07	5	0
5	0	7	07	11	00	14	14	5	3
5	3	7	01	10	11	14	02	5	6
5	6	6	15	10	03	13	10	5	9
5	9	6	10	9	25	13	08	6	0
6	0	6	05	9	08	12	10	6	3
6	3	6	00	9	01	12	01	6	6
6	6	5	16	8	15	11	03	6	9
6	9	5	12	8	09	11	05	7	0
7	0	5	09	8	03	10	18	7	3
7	3	5	05	7	18	10	11	7	6
7	6	5	02	7	13	10	05	7	9
7	9	4	19	7	08	9	19	8	0
8	0	4	16	7	03	9	13	8	3
8	3	4	14	7	01	9	08	8	6
8	6	4	11	6	17	9	02	8	9
8	9	4	9	6	13	8	18	9	0
9	0	4	6	6	10	8	13	9	3
9	3	4	4	6	06	8	09	9	6
9	6	4	2	6	03	8	05	9	9
9		4	0	6	00	8	0	10	0

The price of the Bushell of Wheat for Frie-Town-Bakers.

The price of the Bushell of Wheat for Forreyners.

The manner of using these Tables of Bread.

First, you must consider the price of Wheat in the Market, which must neither be of the best, or worst, but of the midling sort and price. Then you must consider whether the Baker be a Free man of the City or Corporation Town or not: For Free men are allowed two shillings more upon the quarter, which is three pence in the Bushel more for profit, then others which are not free; the one being allowed six shillings in a quarter, the other but four. These allowances are already abated for in these tables, so that without any farther allowance, finde the price of Wheat on the one side of the table for Free Bakers; or on the other side for Forreigners, and in the midst you have the several Weights, of the Peny White, Wheaten, and Houshold loaves.

And the Law is very strict against Bakers in case of offending. For if the Major or Baliff finde their bread too light, they may take

take it away and give it to the Poor of the Town, or Parish. And by the Statute of *Hen.* 3. 51. and *Eliz.* 31. If a Baker want but one Ounce in 36 of this Assize, for the first, second and third fault he may be amerced; but for the fourth fault he is to be set in the Pillory without redemption.

Of Liquid or Wet Measures.

THere are four Measures for liquid things in most use, the Pint, the Quart, the Pottle and the Gallon. Other greater things being more properly vessels to hold liquor, then to measure it.

These are either doubled from the lesser, or halfed from the greater, so that

Two Pints make a Quart,
Two Quarts makes a Pottle,
Two Pottles make a Gallon,

Or

half a Gallon is a Pottle.
half a Pottle is a Quart.
half a Quart is a Pint.

Or more fully thus.

	Pints	Quarts	Pottles
In one Gallon are	8	4	2
Pottle	4	2	1
Quart	2	1	

I shewed before there is such a difference in these Measures for Beer and Wine, as there is between 4 and 5, so that 4 Gallons of Beer measure is 5 of Wine measure.

Now our Beer and Ale is usually reckoned and sold by Barrels, Kilderkins, and Firkins.

If you would know how many Gallons, Quarts, or Pints are in any of these, these tables will shew you.

For Beer Vessels.

	Pints	Quarts	Pottles	Gallons
A Barrel is	288	144	72	36
A Kilderkin is	144	72	36	18
A Firkin is	72	36	18	9

For Ale Vessels.

A Barrel holds	256	128	64	32
A Kilder. holds	128	64	32	16
A Firkin holds	64	32	16	8

By

By this you may see that as the Proverb saith, *Many hands* (so many mouthes) *make quick work*. For there being but 128 quarts in a Barrel of Ale 144 quarts in a Barrel of Beer, a Company of Souldiers which are usually 130 or 140 men, may very well drink it up; it being but each man his quart. And by this you may in some sort know what will furnish a greater Army or Navy. For a man of War having 250 men aboard spends a Tun of Beer every day, each man being allowed his Kan, which is about a Wine Gallon.

Wine Vessels with their Content are these.

	Pints	Quart.	Pot.	Gall
A Tun is	2016	1008	504	252
A Pipe or Butt	1008	504	252	126
A Punchion	672	336	168	84
An Hogshead holds	504	252	126	63
A Tierce of a Pipe	336	168	84	42
Half Hogshead	252	126	63	31 1/2
A Rundlet holds	144	72	36	18

It is commonly thought that a Pint of Wine or Water weigheth a Pound Troy, but it will be found rather to weigh a Pound Avoir-du-poiz. For Doctor *Wybard* having

two or three experiments about this by the Standard Gallon at Guild Hall, found that the Wine Gallon of Water weighed 8 li. 1 Ounce, 11 Drams by Avoir-du-poiz weights at Guild Hall, whereas it weighed 9 pound 10 ounces, 1 Dram, 1 quarter by the Troy Weights at Goldsmiths Hall. So that a Pint of Water is 1 pound and a quarter of an Ounce by Troy weight. But by other mens Observations it is found somewhat above, *viz.* that a Pint of Wine should weigh one pound, and about half an Ounce, yet Wine is somewhat lighter then Water, as there is also some difference in the weight of Waters, though not much.

And according to some Observation this way, me thinks the Content of a Vessel might in some sort (though not altogether so exactly) be known, as well as by Gauging.

To this end take these Observations, which were given me, and yon may make trial and use of them as you find them.

Names

Names of the Vessels.	Wine Gallons	Tare C.q.li.	weight C.q.li.
Rundlet Comeins	10½	0 0 23	1 1 14
Beer Barrel	45	0 2 0	3 1 11
Half Hogshead	31½	0 1 23	2 1 11
Terce	42	0 2 14	3 0 14
Rochel Hogshead	46	0 3 17	3 1 20
High Countrey Hogshead	140	0 2 27	4 0 6
Graves Hogshead	63	0 3 6	4 2 22
Tunchion	84	0 3 22	6 1 2
Maligo Butt	112	1 0 18	8 1 12
Canary Pipe	116	1 0 20	8 2 17
Malmesby Butt	226	1 1 09	9 1 17

This may be further improved by considering the weight of other things compared together, which I finde thus set down in *Gerard Malynes, Lex Mercatoria, pag* 30.

li.

The *Amphora* of the *Romans*, weighs in *Antwerp* Weights.

Of Wine or rain water	50
Of River Water	53
Of Oil or Butter	45
Of Beans and Peaſe	35
Of Linſeed Oil	39
Of Corn	40
Of Almonds	42
Of Raiſins	49
Of Figs and Cheſtnuts	67
Of Honey	75
Of Quickſilver	850

Of Dry Meaſures.

Corn or Grain is meaſured by Gallons, but this Gallon is neither the Wine Gallon nor the Ale Gallon; but in the midſt between both, they being in proportion as 18 33,35. The common names and content of the Meaſures of theſe things are thus.

	A Laſt.	*Quar.*	*Cornook*	*Strike.*	*Buſh.*
Pints	5120	512	256	128	64
Quarts	2560	256	128	64	32
Pottles	1280	128	84	32	16
Gallons	640	64	32	16	6
Pecks	320	32	16	8	4
Buſhels	80	8	4	2	1
Strikes	40	4	2	1	
Cornooks	20	2	1		
Quarters.	10	1			

By this you may see that 500 men, may very well spend a Quarter of Wheat every day, it being but about a li. for each man. And a Regiment of Horse being about 600, may spend a Last or 10 quarters of Oats every day, it being but little above a Gallon or half a peck for each horse, *viz.* 640 Gallons. By this a Governour of a Castle, may guesse how to furnish a place with these things, to hold out any time; or may know how long he is able to hold out with the provisions he hath.

Sea Coals and Salt are also measured by these Pecks and Bushels, but then they are either heaped, or else there is allowed five striked Pecks to the Bushel, and this is called Water-measure. Thirty and six such heaped Bushels are a Chaldron of Coals; yet on Shipboard they allow 21 Chaldron to the score.

Observations about Gold, Silver, and other Metals.

Gold is the most worth of any Metal.

The worth of Gold.

One

		li.	s.	d.	q.
One pound weight	Troy is worth	40	0	0	0
One ouce		3	6	8	0
One Peny-weight		0	3	4	0
One Grain		0	0	1	2

This is the price of Ordinary Gold.
Angel Gold is worth somwhat more, and Sovereign Gold somwhat less.

The worth of Silver.

		li.	s.	d.	q.
One pound weight	Troy is worth	3	0	0	0
One Ounce		0	5	0	0
One Peny-weight		0	0	3	0
One Grain		0	0	0	2½

But of English Coin.

		li.	s.	d.	q.
Of Gold	one pound Troy weight is worth	40	18	4	3
Of Silver		3	2	0	0

And by proportion.

		li.	s.	d.	q.
Of Gold	one pound weight Avoir-du-peiz	49	13	8	1
Of Silver		3	15	3	2

By this account 100 li, of Silver money weighs

weight 26 li. 9 Ounces Avoir-du-poiz.

But 100 li. in Gold doth not weigh fully two pounds Avoir-du-poiz; but wants about a quarer of an Ounce.

As Gold is more worth, so it is more weighty, then any other Metal. So that if you should cast 7 Bullets of these several Metals, their weights will have this proportion one to the other.

Gold	18000	*Silver*	5437
Quick-silver	7143	*Braß*	4737
Lead	6053	*Iron*	4210
		Tin	3895

Hence there may be a good Experiment for the Trial of counterfeit Gold. For Gold being heavier then Lead by about a third part, and heavier then Silver by about an half, no counterfeit peice can be made of these or any Metals which are lighter, but the difference may be discerned, and suspected either by the breadth or thickness.

But if this difference be not thus discerned or only suspected, you may make a more certain trial by weighing it in the water, as *Archimedes* did the Golden Crown.

For this is a sure rule in the Art Statick, that every thing being in the water, doth lose so much of his proper weight, as the

quantity or bulk of ſo much water doth weigh, ſo that Gold being ſcarce half the quantity of Braſs or Silver, doth ſcarce loſe half ſo much of its weight in the water, as Silver or Braſs will. As you may ſee plainly by weighing a two ſhilling piece againſt his Braſs; weight in the water, let the ſcales be made to ſtand never ſo equal with them out of the water; yet put them into a pale of water, and weigh them there, and the Gold will weigh 10 or 12 Grains heavier then the braſs weight.

And this putting of things into water may be of good uſe to meaſure ſmall irregular Bodies. For either by the riſing of the water in the veſſell, or by the over-flowing of the water, and weighing it, or rather meaſuring it in a fit veſſel of ſome regular form, you may know the true quantity of the thing you deſire.

And if the Body to be meaſured be great, you may make a little model thereof, allowing an Inch, or a quarter of a Inch for every foot. And thus you may know the burden or weight of any Ship.

If you want a fit veſſel to meaſure the water in, you may make uſe of Dr. *Wybard's* Experiment concerning the weight of Water, *viz.*

In Inch Meaſure.

The Ounce Troy of Water, is one Inch 8949 parts, of ſolid meaſure.

The Ounce Avoir-du-poiz; is one Inch 72556 parts

In Foot Meaſure.

	P. Parts,
The Ounce Troy of Water, is	0,0010960.
The Ounce Avoir-du-poiz, is	0.0009959.

In Inch Meaſure.

	Inch Parts.
The Pound Troy of Water, is	22.7368.
The Pound Avoir-du-poiz, is	27.5:9

In Foot Meaſure.

	F. Parts.
The Pound Troy of Water, is	0.013158
The Pound Avoir-du-poiz, is	0.015977

A Foot Square of Water is 912 Ounces Troy weight, which is 76 li. Troy. And the ſame in Avoir-du-poiz weight is 62 li. $\frac{10}{177}$ or 62 li. 588 parts, which is 62 li. 9 Ounces, 6 Drams and an half.

And though there may be ſome difference between Rain Water, River Water, and Foun-

Fountain Water, yet the difference is not so much as *Snellius* makes it, *viz.* as 1000000 to 1007522. But the greatest difference Dr. *Wybard* could find, trying by several Waters, was only as 1000000 to 1002104, being about 2 in a 1000.

There is one Experiment more, concerning the finding of the time of the day by those Metals, which is approved of by the experience of many, and the judgment of some Physicians.

Having a Gold Ring and a Silver drinking Boule, take a small thred or silk, and measure the compass of the top of the silver Boule, which will be a convenient length for your use: then put this thred through the Ring, and tie the ends thereof together, taking up as little as you can with the knots. Put this thred over your thumbe, so that it may hang upon the lower joynt of your thumbe where you feel the Pulse beat; Then stretch out your hand and hold it so that the inside of your thumbe may be upward, and hold your hand so over the Boule that the Ring may hang as neer the midst of the Boule as you can guesse. And thus holding your hand awhile as still as you can, you shall see that the beating of your Pulse, will give a motion to the Ring, caus-

cauſing it to ſwing croſs the Boule by degrees more and more, till at laſt it will beat againſt the ſides thereof: Now mark when it begins to ſtrike, and tell the ſtrokes as you would a clock, for it will ſtrike what houre of the day or night it is, and then leave off ſtriking, and ſwinging alſo by degrees.

A Table of Arithmeticall Proportions.

1	2	3	4	5	6	7	8	9	10
1	2	3	4	5	6	7	8	9	10
2	4	6	8	10	12	14	16	18	20
3	6	9	12	15	18	21	24	27	30
4	8	12	16	20	24	28	32	36	40
5	10	15	20	25	30	35	40	45	50
6	12	18	24	30	36	42	48	54	60
7	14	21	28	35	42	49	56	63	70
8	16	24	32	40	48	56	64	72	80
9	18	27	36	45	54	63	72	81	90
10	20	30	40	50	60	70	80	90	100
11	22	33	44	55	66	77	88	99	110
12	24	36	48	60	72	84	96	108	120
13	26	39	52	65	78	91	104	117	130
14	28	42	56	70	84	98	112	126	140
15	30	45	60	75	90	105	120	135	150
16	32	48	64	80	96	112	128	144	160
17	34	51	68	85	102	119	136	153	170
18	36	54	72	90	108	126	144	162	180
19	38	57	76	95	114	132	152	171	190
20	40	60	80	100	120	140	160	180	200
21	42	63	84	105	126	147	168	189	210
22	44	66	88	110	132	154	176	198	220
23	46	69	92	115	138	161	184	207	230
24	48	72	96	120	144	168	192	216	240
25	50	75	100	125	150	175	200	225	250
26	52	78	104	130	156	182	208	234	260
27	54	81	108	135	162	189	216	243	270
28	56	84	112	140	168	196	224	252	280
29	58	87	116	145	174	203	232	261	290
30	60	90	120	150	180	210	240	270	300
31	62	93	124	155	186	217	248	279	310
32	64	96	128	160	192	224	256	288	320
33	66	99	132	165	198	231	264	297	330
34	68	102	136	170	204	238	272	306	340
35	70	105	140	571	210	245	280	415	350

A Table of Arithmetical Proportions.

1	2	3	4	5	6	7	8	9	10
36	72	108	144	180	216	252	288	324	360
37	74	111	148	185	222	259	296	333	370
38	76	114	152	190	228	266	304	342	380
39	78	117	156	195	234	273	312	351	390
40	80	120	160	200	240	280	320	360	400
41	82	123	164	205	246	287	328	369	410
42	84	126	168	210	252	294	336	378	420
43	86	129	172	215	258	301	344	387	430
44	88	132	176	220	264	308	352	396	440
45	90	135	180	225	270	315	360	405	450
46	92	138	184	230	276	322	368	414	460
47	94	141	188	235	282	329	376	423	470
48	96	144	192	240	288	336	384	432	480
49	98	147	196	245	294	343	392	441	490
50	100	150	200	250	300	350	400	450	500
51	102	153	204	255	306	357	408	459	510
52	104	156	208	260	312	364	416	468	520
53	106	159	212	265	318	371	424	477	530
54	108	162	216	270	324	378	432	486	540
55	110	165	220	275	330	385	440	495	550
56	112	168	224	280	336	392	448	504	560
57	114	171	228	285	342	399	456	513	570
58	116	174	232	290	348	406	464	522	580
59	118	177	236	295	354	313	472	531	590
60	120	180	240	300	360	420	480	540	600
61	122	183	244	305	366	427	488	549	610
62	124	186	248	310	372	434	496	558	620
63	126	189	252	315	378	441	504	567	630
64	128	192	256	320	384	448	512	576	640
65	130	195	260	325	390	455	520	585	650
66	132	198	264	330	396	462	528	594	660
67	134	201	268	335	402	469	536	603	670
68	136	204	272	340	408	476	344	612	680
69	138	207	276	345	414	483	552	621	690
70	140	210	280	350	420	490	560	630	700

A Table of Arithmetical Proportions.

1	2	3	4	5	6	7	8	9	10
71	142	213	284	355	426	497	568	639	710
72	144	216	288	360	432	504	576	648	720
73	146	219	292	365	438	511	584	657	730
74	148	222	296	370	444	518	592	666	740
75	150	225	300	375	450	525	600	675	750
76	152	228	304	380	456	532	608	684	760
77	154	231	308	385	462	539	616	693	770
78	156	234	312	390	468	546	624	702	780
79	158	237	316	395	474	553	632	711	790
80	160	240	320	400	480	560	640	720	800
81	162	243	324	405	486	567	648	729	810
82	164	246	328	410	492	574	656	738	820
83	166	249	332	415	498	581	664	747	830
84	168	252	336	420	504	588	672	756	840
85	170	255	340	425	510	595	680	765	850
86	172	258	344	430	516	602	688	774	860
87	174	261	348	435	522	609	696	783	870
88	176	264	352	440	528	616	704	892	880
89	178	267	356	445	534	623	712	801	890
90	180	270	360	450	540	630	720	810	900
91	182	273	364	455	546	637	728	819	910
92	184	276	368	460	552	644	736	828	920
93	186	279	372	465	558	651	644	837	930
94	188	282	376	470	564	658	752	846	940
95	190	285	380	477	570	665	760	855	950
96	192	288	384	480	576	672	768	864	960
97	194	291	388	485	582	679	776	873	970
98	196	294	392	490	588	686	784	882	980
99	198	297	396	495	594	693	792	891	900
100	200	300	400	500	600	700	800	900	1000

The description and use of the Table of Arithmetical Proportions.

I May well call it thus, because it is useful in all the parts of Arithmetick, but especially in *The Rule of Proportion*, commonly called, *The Rule of Three.*

First, it is a plain table of Multiplication, and that not only of the digit Numbers, 1, 2, 3, 4, &c. to 10, (which is usual) but to an 100. And if you reckon the single figures at the top of the table, to stand for 10, 20, 30, 40, and 100, and put, or suppose a cypher to the numbers under them, the table will reach to an 100 square. Thus at the beginning of the table you may reckon, *As 8 times 8 is 64. So 8 times 80 is 640.*

Or at the end of the Table,

As 80 times 8 is 640. So 80 times 80 is 6400

The order of working by this table, is as in most others to finde the one of your numbers on the side of the table, and the other at the head, and in the square of these two you shall finde the product. And thus you shall finde the multiplication of any two numbers

numbers under an 100, if the one of them have a cypher after it. But now at other times you must make two enterances for it, and so add them together.

Suppose the Roof of an house to be 12 feet and an half broad, on the one side (and so 25 feet on both sides the riddge) and 48 long, how many feet in all? and so how many squares of 10 foot square therein? and how many Tyles will cover it?

To multiply the breadth,	25 *feet.*
By the length, 4	48 *feet.*
First, 8 *times* 25 *is*	200
And 4 *or rather* 40 *times* 25 *is*	1000
The whole Sum is	1200 *feet.*

Now their square being 10 feet every way, conteins 100 feet in the whole; so that cutting off the two last figures, You have 12 squares of Tyling.

Now if you lay your Tyles but 3 Inches out, then 800 tyles will cover one square. But if you lay them 3 Inches and an half out (as you may, but must not exceed that) then 750 tyles will cover one square. Now if 750 tyles cover one square, how many will cover the whole house, being 12 squares.

First,

Firſt, you ſhall finde 2 times 750 is	1500
Then 10 times 750 is	7500
In all	9000

And ſo many tyles will cover the whole houſe,

In like manner if you know how many Bricks will make a foot, or a yard or a Rod of a wall of one, two or three Bricks thick, you may eaſily caſt up how many 1000 will build an houſe, or make a wall round about an Orchard or a Park. And if you know how much Mortar will lay 1000 Brick; and how many Bricks a Workman can lay in a day, you may eaſily count the charg of building of ſuch an Houſe or Wall.

Suppoſe 4500 Bricks will make a Rod ſquare of a Wall, whoſe thickneſs ſhall be 13 Inches, or a Brick and an half thick. How many then will build an houſe, whoſe heighth is 3 Rod, and the compaſs thereof 12 Rods.

Firſt, multiply 3 by 12, and it makes	36
Rods in all, and multiply this by	4500
5 times 36 is	180
4 times 36 is	144
Setting them in their places and adding the cyphers again, it makes	162000

Take

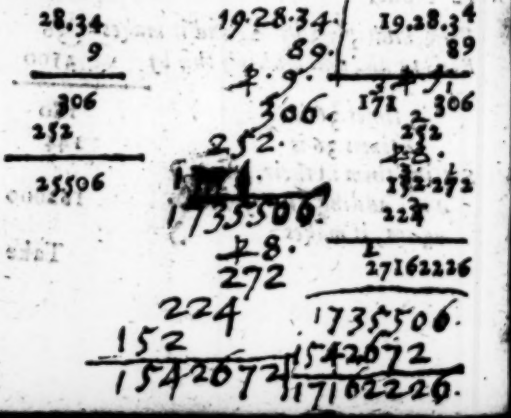
Take a Queſtion or two of another nature,

A Captain is to receive 60 dayes, or two moneths pay for his ſouldiers, being 96 in Number, how much will it come to at 8 d. a man every day.

This muſt be all brought firſt into 8 pences, thus.

You may ſee by the table that 96 times 6 is 576, ſo that 96 times 60, is 5760 eightpences, which you may eaſily reckon up by the following table of accounts to be 192 li.

Many ſuch queſtions may be anſwered by this table, but you ſhall ſee that it may be uſeful to thoſe who are more skilful in multiplication, running over the work by two figures at once, and by careful ordering the figures, avoid much or all of the carrying, which is troubleſome in the ordinary way: as you may ſee by theſe few examples.



The like helps you may finde in Divſion.

As if you would know how many ſhillings are in 108 pence, you muſt divide this number by 12 which are the pence in one ſhilling, which you ſhall do by finding 12 in the ſide of the table, and running along in that line till you finde the ſaid number 108, and this is juſt under nine, ſo that it ſhews there is juſt 9 ſhillings in 108 pence. But now if this number had a cypher after it, *viz.* 1080, then it had been 90 ſhillings.

In like manner, if you would know how many Acres are in a piece of Land whoſe content you finde to be 1440 Poles. Here being 160 Poles in one acre, you muſt divide this number by 160, which becauſe it is not in the Table, leave out the cypher and take the number 16, and in this line you ſhall finde 144, which by adding your cypher again makes 1440 under 9, ſo that there are nine Acres in the ſaid field.

Now though money will be better reduced by the following table of Accounts, yet if you have occaſion for ſome ſuch common Diviſors, you may make a table of them.

But the chiefeſt uſe of this table will appear in the *Rule of Proportion*, commonly called the *Rule of Three*, wherein after the ordinary way you muſt work firſt by Divi-

on, and then by *Multiplication*, but by this table many useful Propositions may be performed, by inspection only, without either of them, and the four numbers will fall out always in a Square posture in the table.

To this purpose, first finde your first number on the side of the table; and finde your second number in the same line with it, observing well in which of the Columnes it happens; then finde your third Number likewise on the side of the table under the first number, and in that line, in the very Columne where your second number was found, you shall finde the fourth number which is the thing desired.

Thus you shall finde that

As 10 *to* 60 *so* 25 *to* 150.

which is thus wrought by the table.

As 10 } *in the side* } *to* 60 } *in the sixth*
So 25 } *of the table* } *to* 150 } *Columne.*

The like proportion you shall finde though you take your first and third Numbers, not in the first but in any other Columne.

Thus you shall finde in the beginning of the Table.

As 60 } *in the* } *to* 100 } *in the*
So 48 } *sixth* } *to* 80 } *last* } *Columne.*
Or 36 } *Columne.* } *to* 60 }

And thus if you leave out the last figure of these

these two Columnes, or rather count them for decimal fractions; they will be a very good table of reduction between Sexagesimal and Centesimal parts, for the proportion will hold either forwards or backward, as thus.

As 10,0 } *in the* { *to* 6,0 *in the*
So 20,0 } *tenth Co-* { *to* 12,0 } *sixth Co-*
Or 30,0 } *lumne* { *to* 18,0 } *lumne.*

Note also if you change the places of your second and third Numbers, the conclusion will be the same, both the ordinary way by Arithmetick, and by this table also, yea though you finde them in any other Columnes, yet the square of the table will give the proportion.

Thus by Arithmetick.

As 10 *to* 15 : *so* 60 *to* 150.

And by the Table.

As 10 } *in the second* { *to* 25 } *in the fifth*
So 60 } *Columne* { *to* 150 } *Columne.*

Again, in Decimal fractions, the table will very readily shew you the part proportional, according to any value of the *Integer*, or whole sum. For if you seek the value of the whole, either in the first or tenth Columne, the 9 other Columnes in that line shews the part proportional for each tenth part.

Thus let the whole number be 120, finde

this in the table, and in that line you shall see that one tenth part of it 12; two tenth parts are 24; 3 are 36, 4 are 48, &c.

If you find the value in the first Columne, then the last figure of these Numbers are to be omitted, or rather reckoned for smaller decimal fractions. Thus the whole being 24, 1 tenth is 2,4, two tenths at 4,8. 3 tenths are 7,2. &c.

This table will be of much use in any such cases unto Artists, especially if it were extended to an 100 square every way as it should be, and as it might be written or Printed in a sheet of large paper: and so it would be as useful a table or Instrument as an Artist could have.

But to give you a question of another nature, which may be of more General concernment.

Three men adventure several summes of money in one stock: the first 90 li. the second 210 li. the third 300 li. in all 600 li. and at the return it brings home 1000 li. What is each mans share?

Here the proportion is as 600, to 1000, which you shall find at the latter end of the sixth and tenth Columns, and so finding the rest of the summes in those Columnes, their shares will be thus.

As	600		to	1000	
to	90	in the sixth	to	150	in the 10.
to	210	Columne	to	350	Columne.
So	300		to	500	

And thus you see how most questions in all the part of Arithmetick may be performed by this table, which with a little use will be familiar to you.

A large Table of Accounts for the ready Casting up of the true value of any great number of any Commodities.

A Table of Accounts.

	1 farthing			2 farthings			3 farthings		
	li.	sh.	d. q.	li.	sh.	d. q.	li.	sh.	d. q.
1			1			2			3
2			2		1	0			1 2
3			3		1	2			2 1
4		1	0		2	0			3 0
5		1	1		2	2			3 3
6		1	2		3	0			4 0
7		1	3		3	2			4 3
8		2	0		4	0			6 0
9		2	1		4	2			6 3
10		2	2		5	0			7 2
20		5	0		10	0	1	3	0
30		7	2	1	5	0	1	10	2
40		10	0	1	18	0	2	6	0
50	1	0	2	1	2	0	3	1	2
60	1	3	0	2	6	0	3	10	0
70	1	5	2	2	11	0	4	4	2
80	1	8	0	3	4	0	5	0	0
90	1	10	2	3	9	0	5	7	2
100	2	1	0	4	2	0	6	3	0
200	4	2	0	8	4	0	12	6	0
300	6	3	0	12	6	0	18	9	0
400	8	4	0	16	8	0	1	5	0 0
500	10	5	0	1	0	10 0	1	11	3 0
600	12	6	0	1	5	0 0	1	17	6 0
700	14	7	0	1	9	2 0	2	3	9 0
800	16	8	0	1	13	4 0	2	10	0 0
900	18	9	0	1	17	6 0	2	16	3 0
1000	1	0	10 0	2	1	8 0	3	2	6 0
2000	2	1	8 0	4	3	4 0	6	05	0 0
5000	5	4	2 0	10	8	4 0	15	12	6 0
10000	10	8	4 0	20	16	8 0	31	5	0 0

A Table of Accounts.

Number of Ells, or such like.	1 Peny			2 pence			3 pence		
	li.	sh.	d.	li.	sh.	d.	li.	sh.	d.
1			1			2			3
2			2			4			6
3			3			6			9
4			4			8		1	0
5			5			10		1	3
6			6		1	0		1	6
7			7		1	2		1	9
8			8		1	4		2	0
9			9		1	6		2	3
10			10		1	8		2	6
20		1	8		3	4		5	0
30		2	6		5	0		7	6
40		3	4		6	8		10	0
50		4	2		8	4		12	6
60		5	0		10	0		15	0
70		5	10		11	8		17	6
80		6	8		13	4	1	0	0
90		7	6		15	0	1	2	6
100		8	4		16	8		1	5	0
200		16	8	1	13	4		2	10	0
300	1	5	0	2	10	0		3	15	0
400	1	13	4	3	6	8		5	0	0
500	2	1	8	4	3	4		6	5	0
600	2	10	0	5	0	0		7	10	0
700	2	18	4	5	16	8	0	8	15	0
800	3	6	8	6	13	4		10	0	0
900	3	15	0	7	10	0		11	5	0
1000	4	3	4	8	6	8		12	10	0
2000	8	6	8	16	13	4		25	0	0
5000	20	16	8	41	13	4		62	10	0
10000	41	13	4	83	6	8	125	0	0

A Table of Accounts.

Number of Els, or such like.	4 Pence li. sh. d.	5 pence li. sh. d.	6 pence li sh. d
1	4	5	6
2	8	10	1 0
3	1 0	1 3	1 6
4	1 4	1 8	2 0
5	1 8	2 1	2 6
6	2 0	2 6	3 0
7	2 4	2 11	3 6
8	2 8	3 4	4 0
9	3 0	3 9	4 6
10	3 4	4 2	5 0
20	6 8	8 4	10 0
30	10 0	12 6	15 0
40	13 4	16 8	1 0 0
50	16 8	1 0 0	1 5 0
60	1 0 0	1 5 0	1 10 0
70	1 3 4	1 9 2	1 15 0
80	1 6 8	1 13 4	2 0 0
90	1 10 0	1 17 6	2 5 0
100	1 13 4	2 1 8	2 10 0
200	3 6 8	4 3 4	5 0 0
300	5 0 0	6 5 0	7 10 0
400	6 13 4	8 6 8	10 0 0
500	8 6 8	10 8 4	12 10 0
600	10 0 0	12 10 0	15 0 0
700	11 13 4	14 11 8	17 10 0
800	13 6 8	16 13 4	20 0 0
900	15 0 0	18 15 0	22 10 0
1000	16 13 4	20 16 8	25 0 0
2000	33 6 8	41 13 4	50 0 0
5000	83 6 8	104 3 4	125 0 0
10000	166 13 4	208 6 8	250 0 0

A Table of Accounts.

Number of Els, or such like.

Number	7 pence li.	7 pence sh.	7 pence d.	8 pence li.	8 pence sh.	8 pence d.	9 pence li.	9 pence sh.	9 pence d.
1			7			8			9
2		1	2		1	4		1	6
3		1	9		2	0		2	3
4		2	4		2	8		3	0
5		2	11		3	4		3	9
6		3	6		4	0		4	6
7		4	1		4	8		5	3
8		4	8		5	4		6	0
9		5	3		6	0		6	9
10		5	10		6	8		7	6
20		11	8		13	4		15	0
30		17	6	1	0	0	1	2	6
40	1	3	4	1	6	8	1	10	0
50	1	9	2	1	13	4	1	17	6
60	1	12	0	2	0	0	2	5	0
70	2	0	10	2	6	8	2	12	6
00	2	6	8	2	13	4	3	0	0
90	2	12	6	3	0	0	3	7	6
100	2	18	4	3	6	8	3	15	0
200	5	16	8	6	13	4	7	10	0
300	8	15	0	10	0	0	11	5	0
400	11	13	4	13	6	8	15	0	0
500	14	11	8	16	13	4	18	15	0
600	17	10	0	20	0	0	22	10	0
700	20	8	4	23	6	8	26	5	0
800	23	6	8	26	13	4	30	0	0
900	26	5	0	30	0	0	33	15	0
1000	29	3	4	33	6	8	37	10	0
2000	58	6	8	66	13	4	75	0	0
5000	145	16	8	166	13	4	187	10	0
10000	291	13	4	333	6	8	375	0	0

10 pence			11 pence			12 pence		
l.	s.	d.	l.	s.	d.	l.	s.	d.
		10			11			1
1		8		1	10			2
2		6		2	9			3
3		4		3	8			4
4		2		4	7			5
5		0		5	6			6
6		10		6	5			7
7		8		7	4			8
8		6		8	3			9
9		4		9	2			10
10		2		10	1	1	0	0
20	1	0	1	1	0	1	10	0
30	1	10	1	12	11	2	0	0
40	2	0	2	2	10	2	10	0
50	2	10	2	12	9	3	0	0
60	3	0	3	2	8	3	10	0
70	3	10	3	12	7	4	0	0
80	4	0	4	2	6	4	10	0
90	4	10	4	12	5	5	0	0
100	5	0	5	2	4	5	10	0
200	10	0	10	4	8	10	0	0
300	15	0	15	7	0	15	0	0
400	20	0	20	9	4	20	0	0
500	25	0	25	11	8	25	0	0
600	30	0	30	14	0	30	0	0
700	35	0	35	16	4	35	0	0
800	40	0	40	18	8	40	0	0
900	45	0	45	21	0	45	0	0
1000	50	0	50	23	4	50	0	0
2000	100	0	100	46	8	100	0	0
5000	250	0	250	116	8	250	0	0
10000	500	0	500	233	4	500	0	0

A Table of Accounts.

	2 Shill.		3 Shill.		4 Shill.		5 Shill.	
	li.	sh.	li.	sh.	li.	sh.	li.	sh.
1		2		3		4		5
2		4		6		8		10
3		6		9		12		15
4		8		12		16	1	0
5		10		15	1	0	1	5
6		12		18	1	4	1	10
7		14	1	1	1	8	1	15
8		16	1	4	1	12	2	0
9		18	1	7	1	16	2	5
10	1	0	1	10	2	0	2	10
20	2	0	3	00	4	0	5	00
30	3	0	4	10	6	0	7	10
40	4	0	6	00	8	0	10	00
50	5	0	7	10	10	0	12	10
60	6	0	9	00	12	0	15	00
70	7	0	10	10	14	0	17	10
80	8	0	12	00	16	0	20	00
90	9	0	13	10	18	0	22	10
100	10	0	15	0	20	0	25	0
200	20	0	30	0	40	0	50	0
300	30	0	45	0	60	0	75	0
400	40	0	60	0	80	0	100	0
500	50	0	75	0	100	0	125	0
600	60	0	90	0	120	0	150	0
700	70	0	105	0	140	0	175	0
800	80	0	120	0	160	0	200	0
900	90	0	135	0	180	0	225	0
1000	100	0	150	0	200	0	250	0
2000	200	0	300	0	400	0	500	0
5000	500	0	750	0	1000	0	1250	0
10000	1000	0	1500	0	2000	0	2500	0

A Table of Accounts.

	6 shill.	7 shill.	8 shill.	9 shill.	10 shil
	li. sh.	li. sh.	li. sh.	li. sh.	li. sh.
1	6	7	8	9	10
2	12	14	16	18	1 00
3	18	1 1	1 4	1 7	1 10
4	1 4	1 8	1 12	1 16	2 00
5	1 10	1 15	2 0	2 5	2 10
6	1 16	2 2	2 8	2 14	3 00
7	2 2	2 9	2 6	3 3	3 10
8	2 8	2 16	3 4	3 12	4 00
9	2 14	3 3	3 12	4 1	4 10
10	3 0	3 10	4 0	4 10	5 0
20	6 0	7 00	8 0	9 00	10 0
30	9 0	10 10	12 0	13 10	15 0
40	12 0	14 00	16 0	18 00	20 0
50	15 0	17 10	20 0	22 10	25 0
60	18 0	21 00	24 0	27 00	30 0
70	21 0	24 10	28 0	31 10	35 0
80	24 0	28 00	32 0	36 00	40 0
90	27 0	31 10	36 0	40 10	45 0
100	30 0	35 0	40 0	45 0	50 0
200	60 0	70 0	80 0	90 0	100 0
300	90 0	105 0	120 0	135 0	150 0
400	120 0	140 0	160 0	180 0	200 0
500	150 0	175 0	200 0	225 0	250 0
600	180 0	210 0	240 0	270 0	300 0
700	210 0	245 0	280 0	315 0	350 0
800	240 0	280 0	320 0	360 0	400 0
900	270 0	315 0	360 0	405 0	450 0
1000	300 0	350 0	400 0	450 0	500 0
2000	600 0	700 0	800 0	900 0	1000 0
5000	1500 0	1750 0	2000 0	2250 0	2500 0
10000	3000 0	3500 0	4000 0	4500 0	5000 0

The use of this Table of Accounts.

THis table will serve for many uses, but that which it will be most used about, as being most necessary, is to finde out the true account of any number of ells, yards, or pounds, being sold for so much the yard, ell, or pound.

For Example.

What will 5000 ells of Lockram at 11 pence the ell come?

To finde out this, first look the price of the ell, at the head of the table, then look down the side of the table, for the number of the ells, so you shall find in the last Column but one of the table, and in the last line but one thereof, that 5000 of any thing at 11 pence a piece, comes to 229 *li.* 3 *shil.* 4 *pence.*

Now if you cannot finde your price in one Columne, or your number of things in one line, you must make two or three parts thereof, and add them altogether; as in the tables of Interest and Rebate before.

Thus, if you would know what 1500 ells at nine pence half peny come to.

First, in the table of nine pence,			
	li.	*sh.*	*d.*
1000 *nine pences are*	37	10	00
and 500 *nine pences are*	18	15	00

Then

This table should be set in y^e page following.

A necessary Table of buying and selling any thing by the Hundred.

Price of one pound d. q.	Price of an hundred weight li. sh. d.	Price of one pound d. q.	Price of an hundred weight li. sh. d.	Price of one pound d. q.	Price of an hundred weight. li. sh. d.
0 1	0 2 4	6 1	2 18 4	12 1	5 14 4
0 2	0 4 8	6 2	3 0 8	12 2	5 16 8
0 3	0 7 0	6 3	3 3 0	12 3	5 19 0
1 0	0 9 4	7 0	3 5 4	13 0	6 1 4
1 1	0 11 8	7 1	3 7 8	13 1	6 3 8
1 2	0 14 0	7 2	3 10 0	13 2	6 6 0
1 3	0 16 4	7 3	3 12 4	13 3	6 8 4
2 0	0 18 8	8 0	3 14 8	14 0	6 10 8
2 1	1 1 0	8 1	3 17 0	14 1	6 13 0
2 2	1 3 4	8 2	3 19 4	14 2	6 15 4
2 3	1 5 8	8 3	4 1 8	14 3	6 17 8
3 0	1 8 0	9 0	4 4 0	15 0	7 0 0
3 1	1 10 4	9 1	4 6 4	15 1	7 2 4
3 2	1 12 8	9 2	4 8 8	15 2	7 4 8
3 3	1 15 0	9 3	4 11 0	15 3	7 7 0
4 0	1 17 4	10 0	4 13 4	16 0	7 9 4
4 1	1 19 8	10 1	4 15 8	16 1	7 11 8
4 2	2 2 0	10 2	4 18 0	16 2	7 14 0
4 3	2 4 4	10 3	5 0 4	16 3	7 16 4
5 0	2 6 8	11 0	5 2 8	17 0	7 18 8
5 1	2 9 0	11 1	5 5 0	17 1	8 1 0
5 2	2 11 4	11 2	5 7 4	17 2	8 3 4
5 3	2 13 8	11 3	5 9 8	17 3	8 5 8
6 0	2 16 0	12 0	5 12 0	18 0	8 8 0

Then in the table of half pence.

1000 *half pence are*	02	01	08
and 500 *half pence are*	01	00	10
In all	59	07	06

You may make this work somewhat shorter, if you divide your numbers, so that they may lie together, and so take them both together out of the Table; by adding them in one sum. As now 700 & 800 make up 1500.

Then

	li.	*sh.*	*d.*
700 *nine pences are*	56	5	6
800			
And			
900 *half pence*	3	2	6
800			
In all	59	7	6

But the table is so plain and useful, that you will easily find out ways of your self, to cast up any such account very certainly and suddenly thereby.

This table also if you have any occasion will serve you as a table of Interest at five *li. per Centum*. For it instead of the number of pence at the head of the Columnes, you reckon so many Moneths, then the Sums underneath, will shew the true Interest, due for any number of pounds, set down in the side of the table; just as before in the table of Interest at six *per Centum*, *pag.* 71, 72, 73, 74, 75.

Then

The use of this Table.

BY this table, knowing the price of one pound of any thing, you may know how much the hundred weight (being 112 pound) comes to. Or, having bought any thing by the hundred weight, you may know how to retail it again by the pound. Thus if one pound of any thing cost four pence, three farthings, a hundred weight of the same commodity will cost 2 pound, 2 shillings, and 4 pence. Also, if a hundred weight of any thing cost 4 pound, 6 shillings 4 pence, the price of one pound thereof will cost 9 pence farthing: the like may be done for any other. But if your commodity come to above the 18 pence the pound, you may do it by the half of the price, or else reckon first for the shillings, and after for the rest of the price.

A Table of Expences or Wages, whereby knowing what it is for one day, you may see what it is in a Week, Moneth, or Year.

By the day	By the week	By the moneth	By the year.
	li. sh. d.	li. sh. d.	li. sh. d.
Pence 1	0 0 7	0 2 4	1 10 5
2	0 1 2	0 4 8	3 0 10
3	0 1 9	0 7 0	4 11 3
4	0 2 4	0 9 4	6 1 8
5	0 2 11	0 11 8	7 12 1
6	0 3 6	0 14 0	9 2 6
7	0 4 1	0 16 4	10 12 11
8	0 4 8	0 18 8	12 3 4
9	0 5 3	1 1 0	13 13 9
10	0 5 10	1 3 4	15 4 2
11	0 6 5	1 5 8	16 14 9
1	0 7 0	1 8 0	18 5 0
2	0 14 0	2 16 0	36 10 0
3	1 1 0	4 4 0	54 15 0
4	1 8 0	5 12 0	73 0 0
5	1 15 0	7 0 0	91 5 0
6	2 2 0	8 8 0	109 10 0
7	2 9 0	9 16 0	127 15 0
8	2 16 0	11 4 0	146 0 0
9	3 3 0	12 12 0	164 5 0
Shillings 10	3 10 0	14 0 0	182 10 0
11	3 17 0	15 8 0	215 0 0
12	4 4 0	16 16 0	219 0 0
13	4 11 0	18 4 0	237 5 0
14	4 18 0	19 12 0	255 10 0
15	5 5 0	21 0 0	273 15 0
16	5 12 0	22 8 0	292 0 0
17	5 19 0	23 16 0	310 5 0
18	6 6 0	25 4 0	328 10 0
19	6 13 0	26 12 0	346 15 0
20	7 0 0	28 0 0	365 0 0

In a year there are 365 dayes, and in one pound or twenty shillings there is 240 pence. So that one peny a day comes in the year to one pound, one half pound, one groat, and one peny; and thus you may reckon for any other number of pence.

As for Example, 6 pence a day.

Is 6 pound,	06	00	00
6 half pounds, which are	03	00	00
6 Groats, which are	00	02	00
6 pence	00	00	06
In all	09	02	06

Upon this table you may make these and such like considerations.

A penny a day in one yeer comes to one *l.* 10. *shil.* and 5. *d.* Therefore in 21 years, it will come to 31 *l.* 18 *shill.* 9 *d.* This will come only by the saving thereof. But if you also employ this, so that it may gain after the rate of ten in the hundred, it will amount to above four score and six pounds in the said time, which may be a good portion for a mans childe.

A table of the Kings of England.

Kings.	They began to Reign.	They reign'd		
		yeʳs.	mo.	da.
1 Wil. Conq.	1066 Octob. 14	20	11	21
2 Wil. Rufus	1087 Septem. 9	12	11	18
3 Henry 1	1100 Auguſt 1	35	4	11
4 Stephen	1135 Decemb. 2	18	11	18
5 Henry 2	1154 Octob. 25	34	9	2
6 Richard 1	1189 July 6	9	9	21
7 John	1199 April 6	17	7	0
8 Henry 3	1216 Octob. 19	56	0	0
9 Edward 1	1272 Novem. 16	34	8	8
10 Edward 2	1307 July 7	19	7	6
11 Edward 3	1326 Januar. 25	50	5	0
12 Richard 2	1377 June 21	22	3	14
13 Henry 4	1399 Septem. 29	13	6	3
14 Henry 5	1412 March 20	9	5	24
15 Henry 6	1422 Auguſt 31	38	6	16
16 Edward 4	1460 March 4	22	1	8
17 Edward 5	1483 April 9	0	2	18
18 Richard 3	1483 June 22	2	2	5
19 Henry 7	1485 Auguſt 22	23	8	19
20 Henry 8	1509 April 22	37	10	2
21 Edward 6	1546 Januar. 28	6	5	19
22 Mary	1553 July 6	5	4	22
23 Elizabeth	1558 Novem. 17	44	4	28
24 James.	1602 March 24	22	0	0
25 Charles	1625 March 27	23	11	2

The use of the Table of Kings.

This Table of the Kings I suppose may be necessary in the searching out the antiquity of many old Evidences, which are dated many times by the yeers of the King then reigning, and not by the yeers of our Lord. And it might be more plain and profitable if it were drawn out a little larger, but time and paper are wanting: I have only therefore as a patern shewn how it might be done in this hundred yeers last past, and added some brief notes out of History thereunto, and added one Column shewing the yeers which are past to this present year 1656.

The use of this Table will appear in such questions.

How long is it since the 25 year of King Henry the Third?

Which is thus found,

Henry 3 began to reign, *Anno Dom.*	1216
To which add the the 25 yeers,	25
So is it, *Anno Domini*	1241
Which substracted from the present year	1656
There remains the years since	415

Ann. Dom	A. Re.	Since	Queen Elizabeth began 17 Novemb. 1558.
1558	1	98	A Parliament called
1559	2	97	Monasteries suppressed
1560	3	96	War with *Scots* and *French*.
1561	4	95	*Paul's* Steeple burnt
1562	5	94	Tempest and Earthquake
1563	6	93	20000 die of the Plague in
1564	7	92	*Thames* frozen (*London*.
1565	8	91	Peace with *France*.
1566	9	90	King *James* born
1567	10	89	Royal Exchange finished
1568	11	88	A Dry Summer
1569	12	87	Rebellion in the North
1570	13	86	Wars with *Scotland*.
1571	14	85	Earthquake in *Herefordshire*
1572	15	84	Massacre in *France*
1573	16	83	Earl of *Essex* goes to *Ireland*
1574	17	82	Counterfeit Spirits punished
1575	18	81	An Earthquake
1576	19	80	*Forbisher's* North Voiage
1577	20	79	Infection at *Oxford* Assises
1578	21	78	A great Snow
1579	22	77	A curious Lock-smith
1580	23	76	Great Earthquake & Blasing *
1581	24	75	Three Jesuits executed
1582	25	74	New Kalender began
1583	26	73	Earthquake in *Dorsetshire*
1584	27	72	*Nantwich* burnt
1585	28	71	Tobacco first used in *England*

Ann Dom	K. Age	Since	Queen Elizabeth / King Charles
1586	29	70	*Ludgate* new built
1587	30	69	*Blackwel* Hall new built
1588	31	68	*Spains* Armado overthrown
1589	32	67	Duke of *Guise* murthered
1590	33	66	Blasphemous *Hacket* hanged
1591	34	65	*East India* Company began
1592	35	64	The *Thames* almost dry
1593	36	63	10633 die of the plag in *London*
1594	37	62	Great Tempest
1595	38	61	Scarcity of Corn
1596	39	60	E. *Essex* takes *Cadix* in *Spain*
1597	40	59	Wheat 13 shillings a bushel
1598	41	58	Great Tempests and Frosts
1599	42	57	Earl of *Essex* goes to *Ireland*
1600	43	56	Embass. from *Russia* and *Barbary*
1601	44	55	Earl of *Essex* beheaded
1602	45	54	Q. *Elizabeth* dies at *Richmond*

King *James* began to Reign the 24 *March* 1602 but one day before 1603.

1603	1	53	30578 die of the plag in *London*
1604	2	52	Peace with *Spain*
1605	3	51	The Powder Treason
1606	4	50	K. of *Denmark* came to *England*
1607	5	49	*Moor*-fields beautified
1608	6	48	Oath of Allegiance
1609	7	47	New Exchange in the *Strand*
1610	8	46	King of *France* murthered
1611	9	45	*Bartbol. Legat* an *Arrian* burnt

1612

Ann. Dom.	Ann. Reg.	Annus Mundi	
			King *James*.
			King *Charles*.
1612	10	4411	*Henry* dies, *Elizabeth* married
1613	11	4	Artillery Company revived
1614	12	42	*Middleton's* Water
1615	13	41	Smithfield paved
1616	14	40	*Charles* created Prince of *Wales*
1617	15	39	*Haidock* the sleeping Preacher
1618	16	38	Sir *Walter Rawleigh* decollated.
1619	17	37	Queen *Anne* dies
1620	18	36	King of *Bohemia* overthrown.
1621	19	35	*Pb.*3 K. of *Spain* dies. *Pb.*4 succe.
1622	20	34	Prince *Charles* goes into *Spain*
1623	21	33	*Black Friers* down-fall
1624	22	32	*Amboyna's* bloody Cruelty.

King *Charles* began to Reign the 25 of *March* 1625.

1625	1	31	63000 die of the plague in *Lond.*
1626	2	30	War with *Spain* and *France*
1627	3	29	Isle of *Rhees* Voiage
1628	4	28	Duke *Buckingham* stabb'd
1629	5	27	*New England* planted
1630	6	26	King of *Sweden* invade *Germany*
1631	7	25	Battel at *Lypsick*, *Tilly* slain
1632	8	24	*London* Bridge burnt
1633	9	23	King of *Sweden* slain
1634	10	22	Ship-money first taxed
1635	11	21	*Par* being about 160 years old

24

1636

Ann. Dom	Ann. Reg	Since	Queen *Elizabeth*.
1636	12	20	*Dutch* take *Spanish* Silver Fleet
1637	13	19	*English* Lyturgy sent into *Scotland*
1638	14	18	The *Scots* National Covenant
1639	15	17	*Dutch* beat the *Spanish* at *Dover*
1640	16	16	The long Parl. begins *Novemb.* 3
1641	17	15	Earl of *Strafford* beheaded
1642	18	14	*Edge-hil* Fight
1643	19	13	*Newberry* first Fight
1644	20	12	*Newberry* second Fight
1645	21	11	*Canterbury* beheaded
1646	22	10	Lord *Fairfax* takes *Oxford*
1647	23	9	King taken by *Parlia.* and Army
1648	24	8	King beheaded.

England Proclaim'd a Free State.
19 *May*, 1649.

1649	1	7	*Hambleton*, *Holland*, *Capel* be-
1650	2	6	*Dunbar* Fight (headed
1651	3	5	*Worcester* Fight
1652	4	4	*Holland* stout and quarrelsome
1653	5	3	The old & new modeld P. dissol.

The Lord Protector Proclaim'd,
19 *December*, 1653.

1654	1	2	Parliam. called but act nothing
1655	2	1	Wars with *Spain*.
1656	3	0	

FINIS.